THE MODEL ENGINEER

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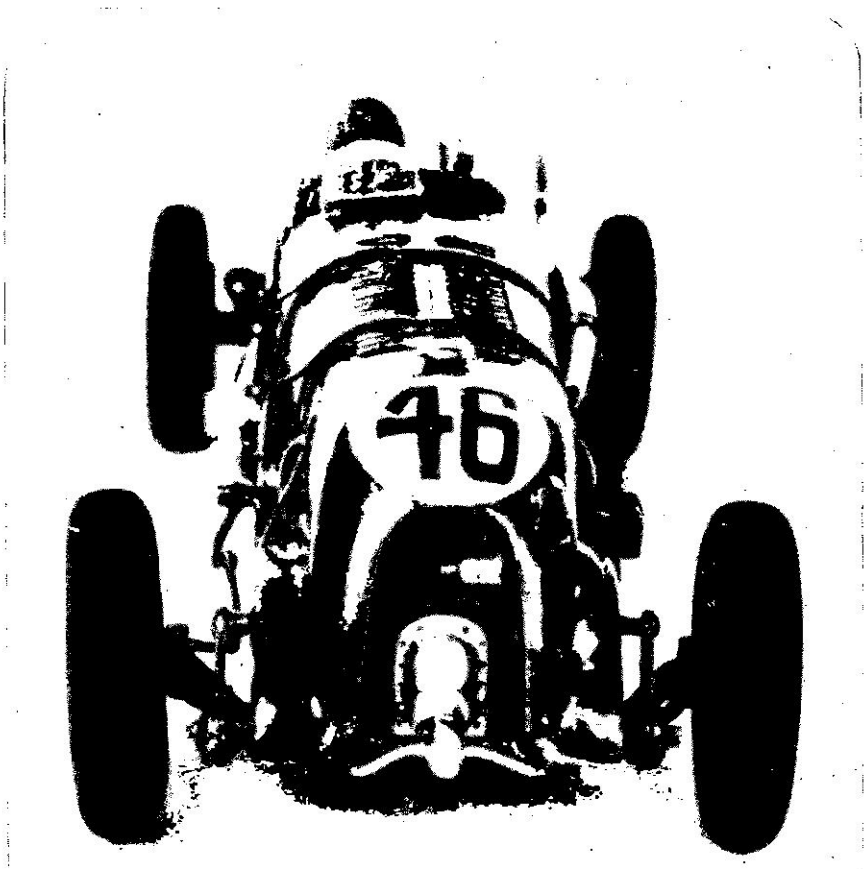

*This imposing view of the late "Tim" Birkin's famous supercharged Bentley, is of a 1/24th scale model by C. Posthumus. Note the blower and twin S.U. carburettors, shock absorbers, steering gear, the realistic bonnet straps and the successful treatment of the bonnet louvres. (A description of this model will be given in the November issue of our companion journal "*The Model Car News.")

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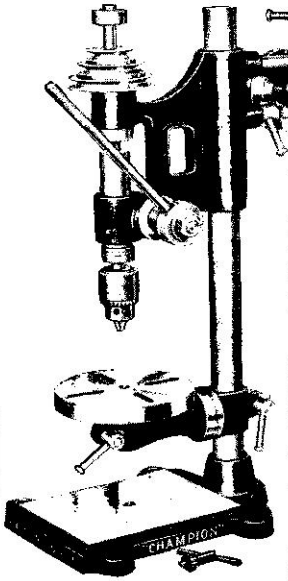

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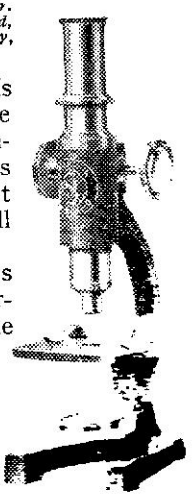

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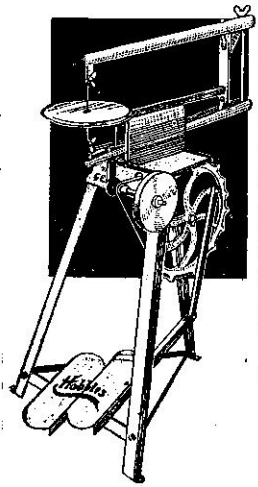

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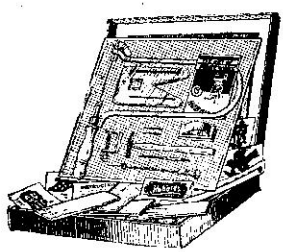

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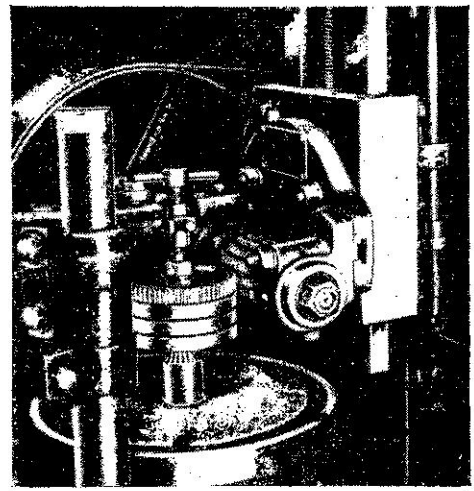

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THE

MODEL ENGINEER

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VOL. 95. No. 2374 NOVEMBER 7th, 1946

Smoke Rings

A Thousand Mile Trip

THE latest claim to a record journey to the MODEL ENGINEER Exhibition comes from Mr. C. G. Meldrum, of Aberdeen, who says that he travelled to London and back in approximately 40 hours, a distance of 1,000 miles. He says: "I enjoyed every minute spent there, and intend to visit the next one. Altogether I thought it a splendid show." For future shows I fully expect to hear from readers who have flown especially from the U.S.A. or even farther afield. The world gets smaller every year, and the magnetic attraction of our show grows greater.

North Staffordshire News

I AM pleased to hear of the revival of the North Staffordshire Models Society, which, under the inspiring leadership of its President, Mr. Thomas Lockett, O.B.E., had such a successful existence in pre-war days. Over seventy members were enrolled at the first post-war meeting in February of this year, and since then some excellent lectures and indoor meetings have been held. On two occasions model racing cars have been seen in action. An exhibition is to be arranged next year, and members are very busy getting their models completed for that occasion. The Society has suffered a severe loss by the death of Mr. W. J. Scorey, a Vice-President, who for several years filled the position of Honorary Secretary most efficiently.

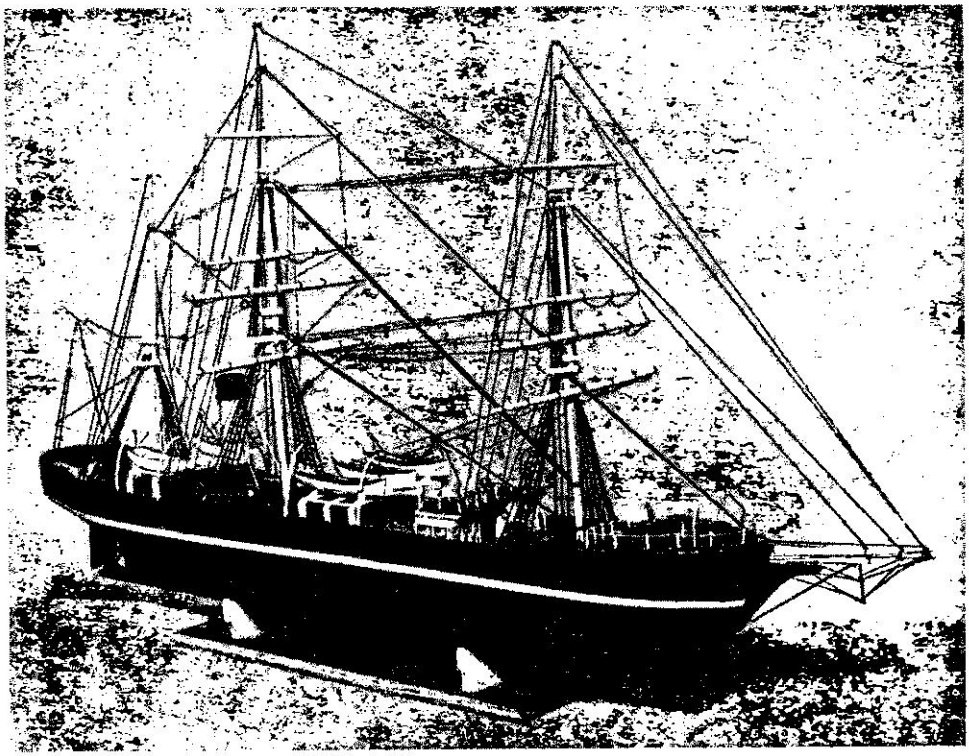
Early "M.E." Days

MR. A. H. ALCOCK, of Weymouth, tells me that he has had a piece of real good fortune, for an old friend has presented him with bound copies of Volumes I to VII of THE MODEL ENGINEER. He has enjoyed browsing over these volumes very much, and in particular was interested in the proceedings of the S.M.E.E. and in the work of the various model engineering personalities who were prominent in those days. I too must confess that those early volumes have a great appeal to me, recalling as they do many personal friends and much ingenious and oft-time beautiful work. If some of those clever model engineers have passed away, their models in many cases still remain and give pleasure and inspiration to later generations. I have seen model engineering grow enormously in the last half-century. Apart from the long row of volumes of THE MODEL ENGINEER, its history is largely written in iron and steel and gunmetal in the models so skilfully and lovingly fashioned by its devoted followers. There is in this thought the justification for the preservation of outstanding models in public museums, and in private collections such as that formed with so much care and discriminating knowledge by the late Mr. H. O. Clark. The enthusiastic collector not only derives much personal pleasure for himself, but renders a distinct service to posterity.

A Model Show at Bristol

THE Junior Welfare Organisation of the Bristol Aeroplane Company announce an exhibition of models and handicraft to be held in the Company's canteen, at Filton Works, on Saturday, November 30th. The show is primarily for the encouragement of juniors under the age of 22, but I am asked to say that exhibits from adults, who would like to add to the general attraction of the show, would be welcomed for the non-competitive section. I hope some of my readers in the West Country will help to make this an interesting and inspiring display, by sending examples of their work. Engineering and ship models, and handicraft generally, would be acceptable. The show will be open to the public from 2 p.m. to 11 p.m., and the exhibition section will be supplemented by some attractive entertainment items. Entry forms and full particulars may be obtained from The Organising Secretary, A.C.E.S. Exhibition, Personnel Department, Filton House, Bristol.

Percival Marshall



S. W. STEVENS makes a "DISCOVERY"

HEREWITH are two photographs of a model of Capt. Scott's ship, *Discovery*, built to a scale of 1/12 in. to 1 ft.

Frequent trips to the original vessel at Temple Stairs, armed with a sketch block and pencil proved helpful, but confusing, in some ways, since a certain amount of structural alteration has taken place since she was first sold and went a-whaling.

The hull was built up in the usual manner with blocks fitted either side of a central keel plate, 2-mm. ply being used for the bulwarks. Split bamboo has proved a boon (thank you, Mr. Bowness!) and has been used for a variety of purposes, from ratlines to spars. I was fortunate in spotting a bundle in a very dusty corner of a seedsman's shop—it had been there since before the war—and the owner thought four-pence would be about right. I thought so too, and counted myself lucky.

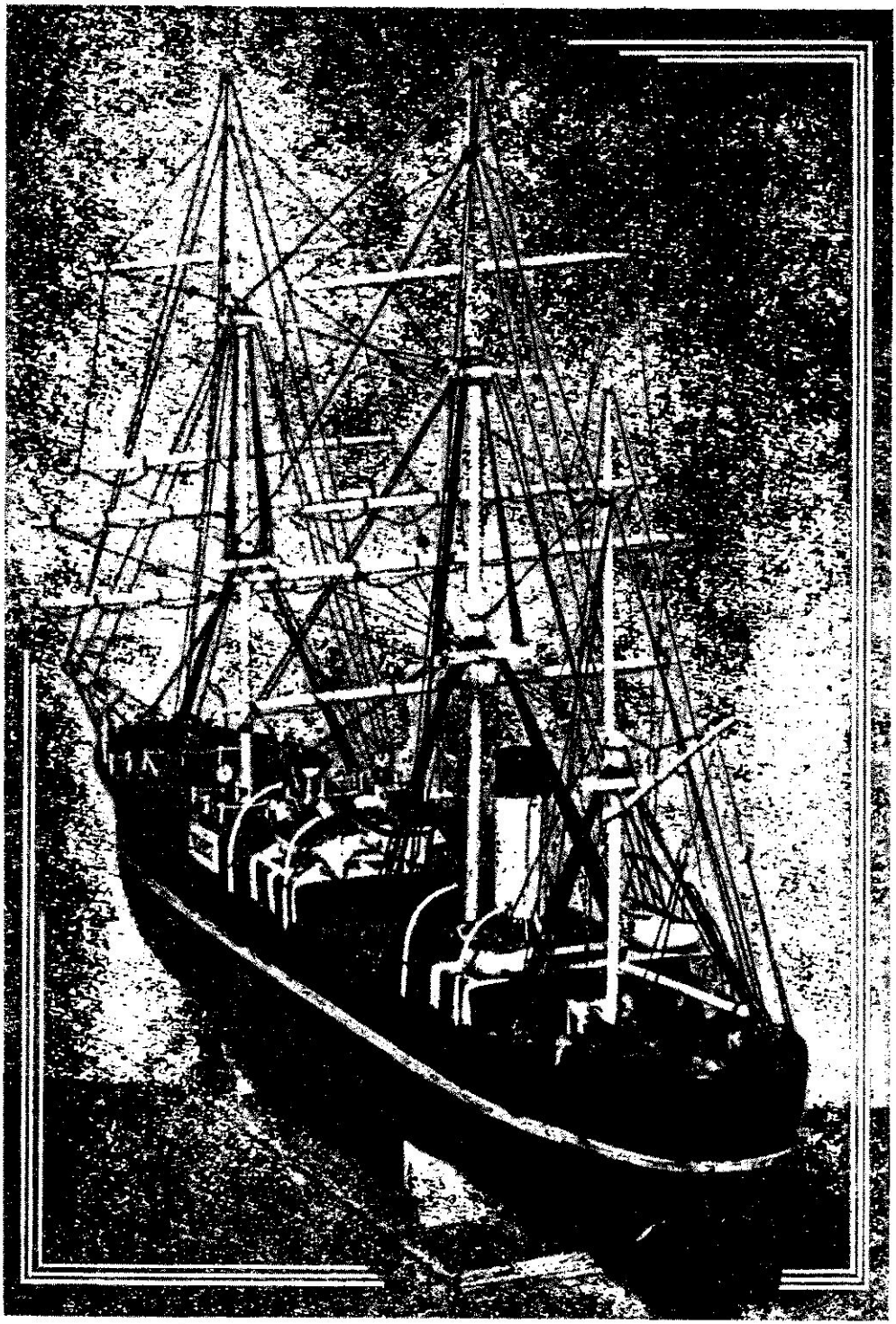
The various deck fittings, capstans, E/R telegraphs, and so on, came from my usual happy hunting ground, the old radio junk box. Capstans, etc., were turned up in the poor man's lathe—a hand drill clamped in a vice and turned vigorously by a small daughter, while father manipulated a file. I can almost feel the shudders of "L.B.S.C." and his many admirers, but anyway, it works. At the moment I am still searching for suitable watch wheels from which I can file alternate teeth and so produce the two steering wheels.

The four companion ways were made up in jigs, the only way to achieve a satisfactory result, with evenly-spaced treads at the correct angle, and well worth the extra trouble involved.

I used balsa for the five ship's boats, and since trying this wood, I shall never go back to hard stuff for similar jobs. Three or four careful cuts with a sharp knife, and the judicious use of fine glass-paper, gives a beautifully-shaped little boat, which can then be easily hollowed out and fitted with the usual thwarts. These boats took a high glossy finish after a coat of flatting, and are complete with sweeps shaped from bamboo.

The shrouds and standing rigging are of three sizes of thread, and for the running gear I used a suitable gauge of black enamelled wire. This

(*Continued on page* 444)



"LIVE STEAMERS" at YEOVIL

Photo by H. C. Tilzey

Yeovil "Live Steamers" at Mr. Douglas Seaton's house. Mr. Seaton is seen with one of his three 7½-in. gauge engines

LOCOMOTIVE enthusiasm at Yeovil is growing rapidly and the formation of a club to be known as "Yeovil Live Steamers" is likely to put the regulator over to full ahead. Already fifteen members have joined up, all of whom have locomotives either built, or in progress, or projected. The engines now available for steaming include a "Molly" and a "Royal Scot" in 3½-in. gauge, "Dyak," "Ada" and "Olympiad" in 2½-in. gauge, while six other locomotives are on the way, among them being two "Hielan' Lassies."

The accompanying photograph is of a club meeting, at the house of Mr. Douglas Seaton, who rejoices in the possession of three 7½-in. gaugers and 75 yards of track. Mr. Seaton is axtending to the members the privilege of erecting en elevated multi-gauge track in his grounds. This will be about 300 ft. long, running amongst trees, with straights of 60 to 70 ft., and curves of approximately 25 to 30 ft. radius. The Hon. secretary is Mr. J. Corbett, 29, West Park, Castle Cary, Somerset, who will be glad to hear from other "live steamers" in the district.

A "DISCOVERY" (*Continued from page* 442)

is very nice to work with, a couple of turns round the bitts, and it stays put. Blocks were mass produced by shaping a length of bamboo, drilling at close intervals, and then cutting the "slices" with a fine fretsaw.

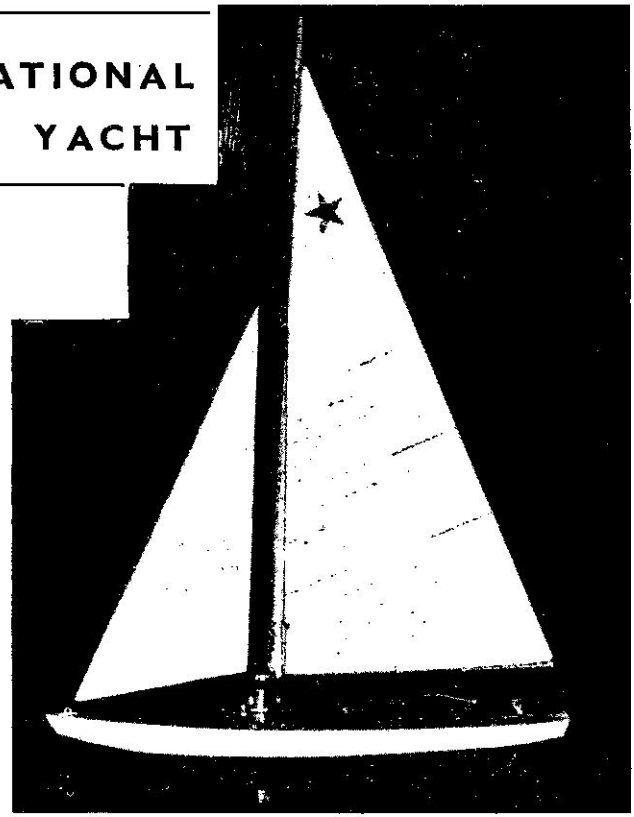
I regret that I was unable to reach the target of fifteen coats of paint, set by our reverend friend, R. W. Cartmel (on page 416, April 25th, 1946), becoming tired after about eight coats.

I sometimes wonder if this high gloss finish we strive for is really the ideal? It certainly bears no resemblance to the original, and if a true reproduction is desired, then surely a shabby, rust-streaked hull, with a few red-lead patches more nearly approaches the requirements? Or does it? I'm ready to duck!

A 30-in. MODEL INTERNATIONAL "STAR" CLASS YACHT

by

A. Galeota



"Lily," the 30-in. "Star," floating

HAVING decided to build a sailing yacht easily transportable yet large enough to give a fine performance, I cast my eye on the International "Star" class which I often watched racing before the war.

From the fine description and drawings in the *Yachting World*, May 20th, 1938, I was able to scale down and build with very little modification from the original, an interesting and smart little boat, and I am indebted to the courtesy of the Editor of the *Yachting World* for granting me permission for the publication of this article, which I trust will interest many readers of this magazine.

A full-size plan was drawn and cardboard templates prepared for the various parts to be cut.

The keel was cut from a strong straight-grained piece of hard seasoned wood, free from knots, and all notches for the frames were cut.

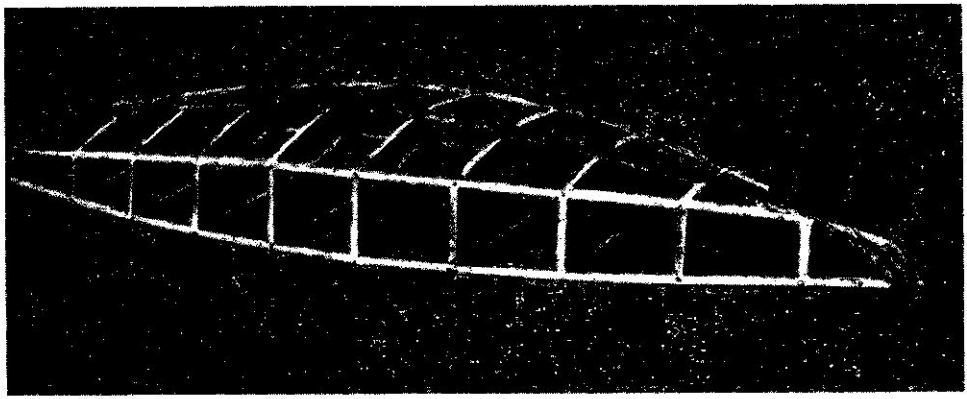
The fin in the original is of cast iron, but to simplify construction I made it of hard wood about $\frac{3}{8}$ in. thick tapered at the edges. The lead was made of the shape as illustrated; easily cast in a wooden mould built up from several layers of wood. About 20 ozs. of lead was required. It was then filed to a rounded shape and fixed to the fin with three screws of about 1¼ in. deeply countersunk, finished off with fine emery paper, and faired to the fin with plastic wood. The fin was temporarily screwed to the keel to ascertain that the shape was correct, then unscrewed.

The frames were made of ¼-in. ply of the shape shown at section N.6 with the grain running straight across. N.1 frame is a very small ne and therefore not hollow in the centre. Notches were cut for gunwale strakes, chines and keel. In cutting frames Nos. 2, 3, 4, 5, allowance was made for bevelling at the sides. The stem-piece with rebate for planking was made and fixed, the transom and knee also, as illustrated. These two extreme parts were connected by a strip of hardwood of 1 in. × ¼ in., a central line was marked fore and aft, and also the position of frames, to facilitate assembly and keep the keel in alignment during construction; see pictures Nos. 1 and 2. The frames were fixed with one screw to the keel and two screws to the fore and aft strip just described.

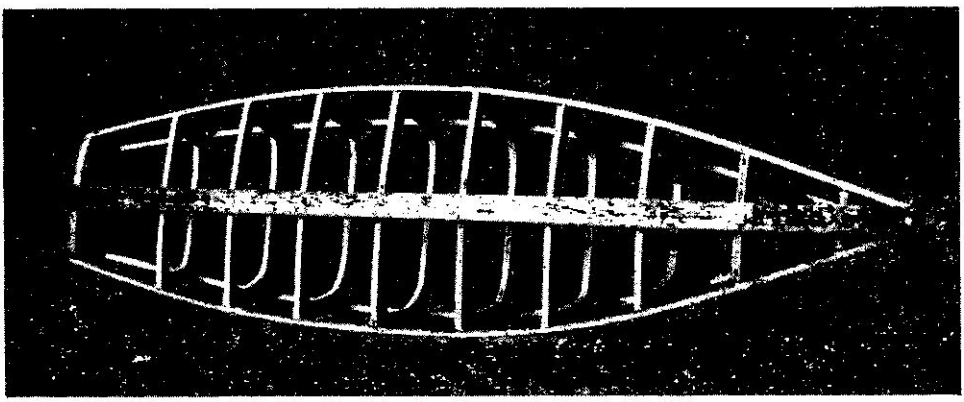
Gunwale strakes of $\frac{3}{16}$-in. sq. birch, chines of $\frac{3}{16}$ in. × ¼ in. were screwed in place with $\frac{3}{8}$-in. brass screws. All frames were readjusted where necessary, checking every one on the transom and on the stem, and the chines bevelled to the correct shape.

Planking. After having sand-papered the structure, I carved small recesses at the bottom of each frame on both sides of the keel, to allow any water that might enter the hull to run free along the bilge for sponging up. The two bottom planks were cut from $\frac{1}{16}$-in. strip of straight-grained ply and after ample cement had been applied over the surfaces, they were fixed in place as follows: to the keel with ¼-in. brass screws about 1¼ in. apart and countersunk to the chines with as many metal clips as possible until set hard (see picture N.3).

The two side planks also of straight-grained $\frac{1}{16}$-in. ply, were easily fixed; screwed to stem and transom only; cemented elsewhere and kept in position by rubber strips, or tape and metal clips, to the gunwales until set hard (see picture N.4). At this stage the fin was screwed in place with brass screws, cemented, and faired to the keel with plastic wood. The hull was finally finished off at the stem and the edge of the chines

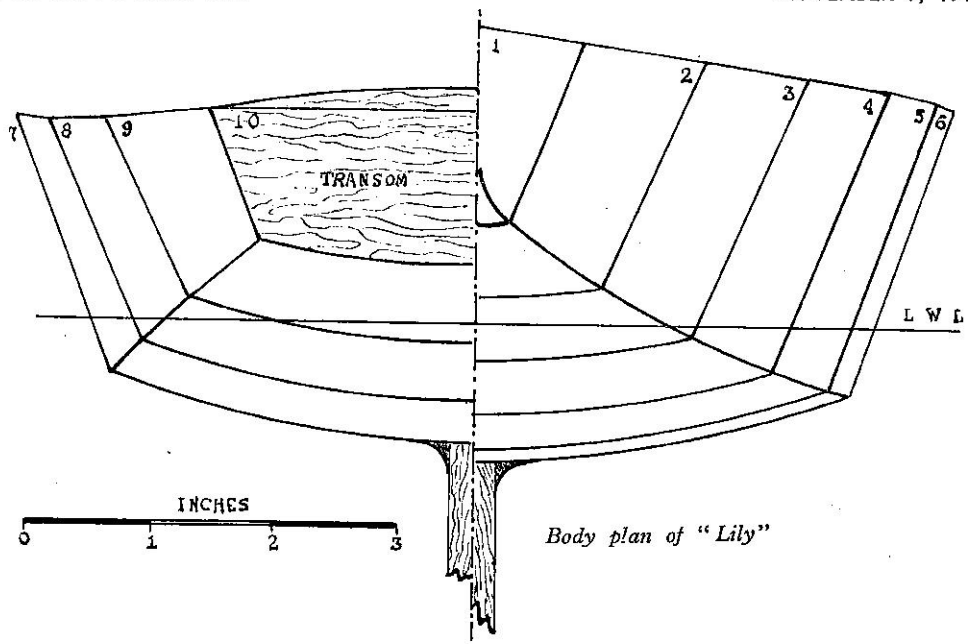


Ready for planking



Showing the position and shape of the formers

Fixing the bilge planks



Body plan of "Lily"

rounded up as far as possible with sand-paper.

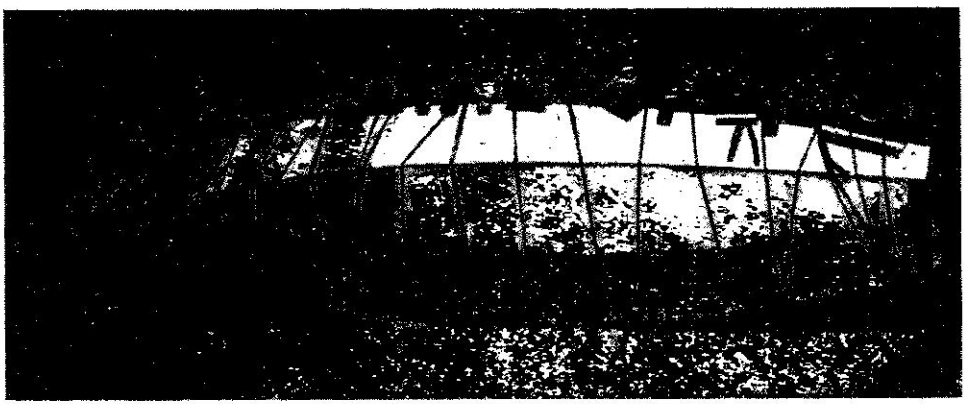
The rudder of my model is made of very hard mahogany, the stem being of 5/32-in. stainless steel screwed to the rudder with fine brass screws. (Both could be made of brass and soft-soldered, if preferred.) The post is of copper tubing passing through the keel and a wooden block conveniently wedged between frames under the deck. The stem on the deck side is provided with a small locking nut. Above this nut there is a Meccano collar with tiller.

The mast tubing is held in position also by a wooden block wedged between frames Nos. 4 and 5. Before fixing both blocks for the rudder post and mast tubing, the top strip was finally removed. The inside of the hull was liberally painted with two coats of brown cellulose paint and floated to ascertain her watertightness.

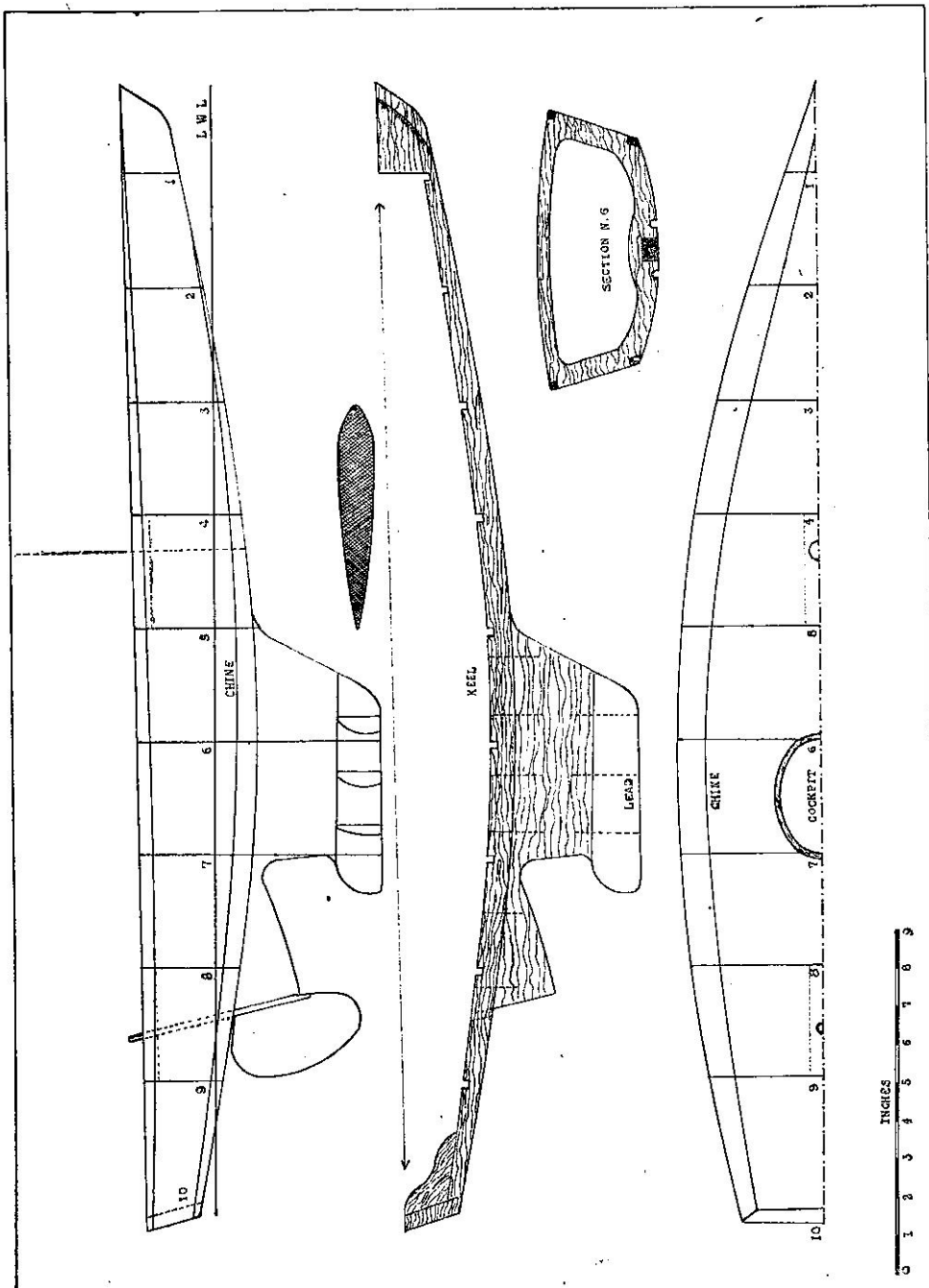
The deck was made in one piece from $\frac{1}{16}$-in. straight-grained ply. The cockpit hole was cut and all necessary holes drilled, and after ascertaining its perfect fit, was cemented and screwed tightly (all screws countersunk). The hull was then finally finished off with fine sand-paper, and the rim carved from mahogany and cemented in place. A cover was made to fit.

Before painting the hull, the transom was faced with thin veneer. The hull was painted with five coats of white cellulose, and the deck with six of clear cellulose, rubbing down after the first coat. This operation was completed before fixing any fittings.

The mast was made of knotless deal measuring 39 in. from deck, $\frac{1}{2}$ in. thick, slightly tapered towards the top. The mainboom was slightly thinner. The fittings were reduced to the



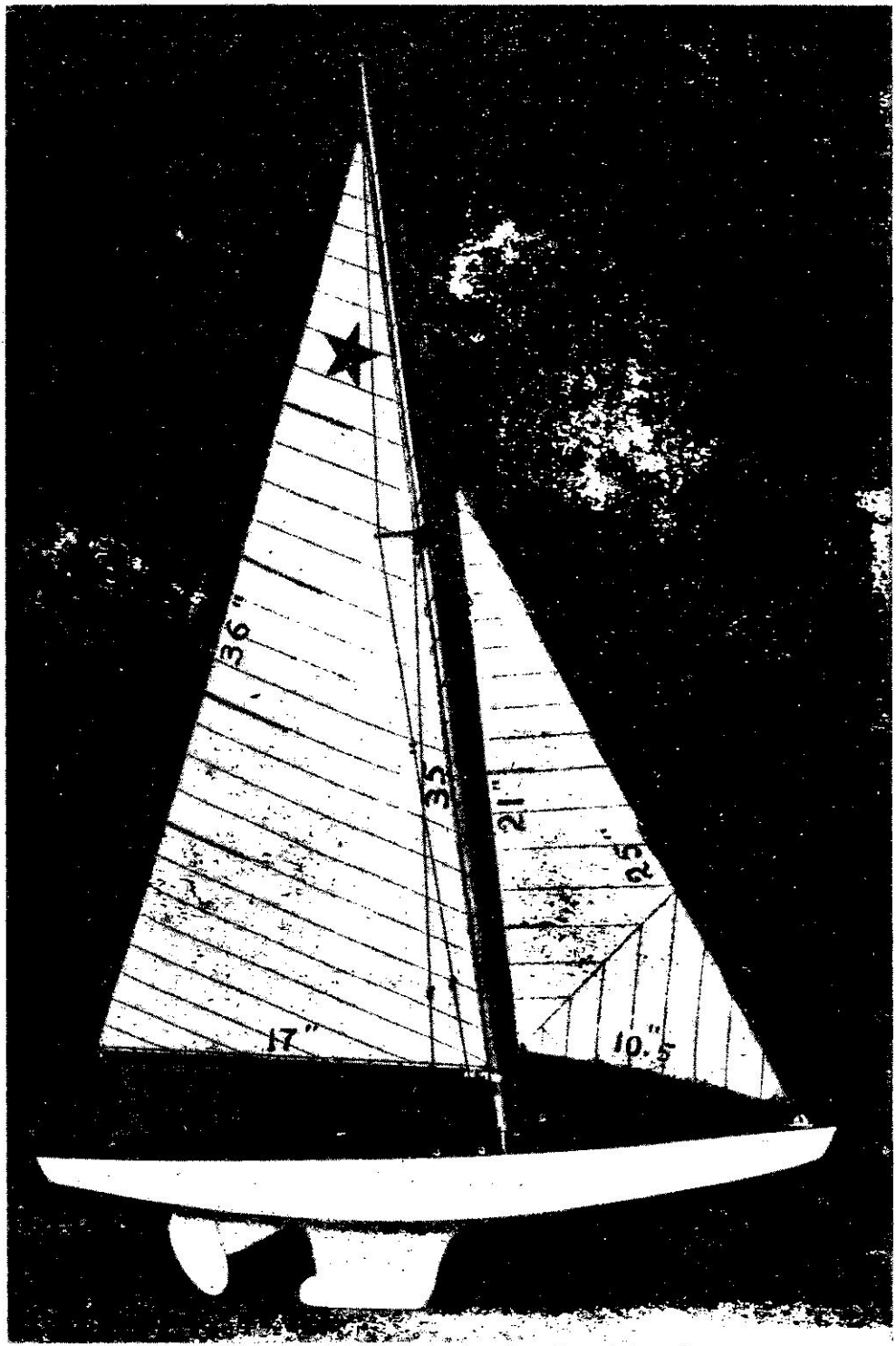
Fixing the side planks



Elevation, keel, section and plan of "Lily"

minimum for simplicity and included: mast tube, fore and aft sheet horses, five eye plates, goose neck with mast collar all made of dural., nine bowsies, mast spreader made of mahogany.

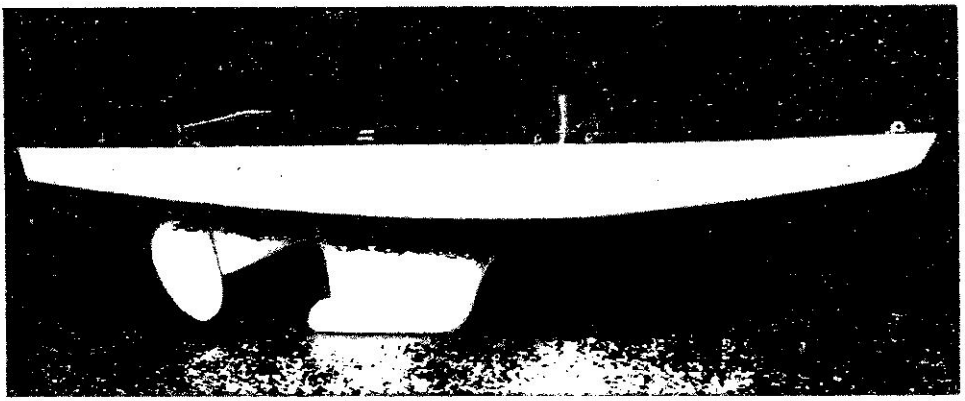
The sails are of very fine cambric, machine-hemmed at the foot and luff, the selvedge being left as it is at the leach. I made paper patterns before cutting. Fine fishing line was inserted inside the hem, to give the final trim. The mainsail is laced to the mast and boom with very fine fishing line. There was no need for battens. Those showing on the photographs and all cross



The completed "Lily," showing dimensions of the sails

lines are only ornamental, drawn with soft pencil. The whole rigging can be dismantled in a few moments. This boat keeps her course well, even with the ordinary rudder, although I contemplate fixing an automatic one at a later date. She moves with the slightest air.

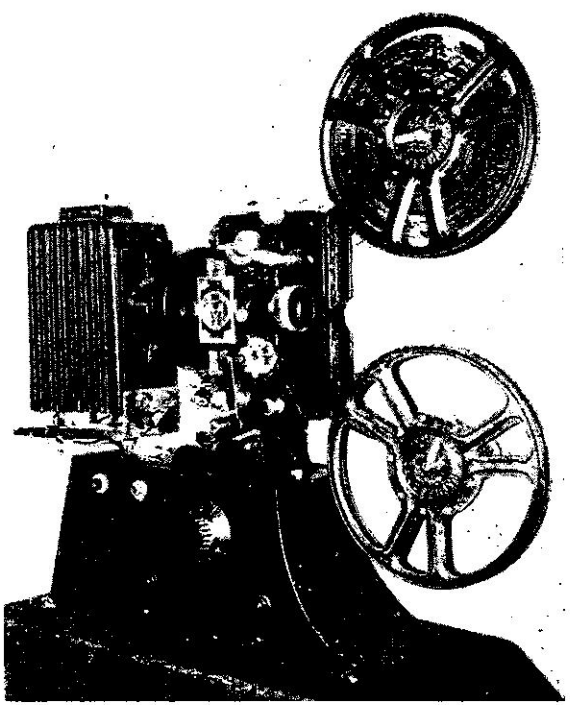
To those who wish to make their own cement, I confidently recommend procuring two or three discarded roll films of average size, soak in boiling water to remove the gelatine. Cut them in small pieces, and dissolve in about 5 ozs. of clear cellulose (dope), adding little at the time, until the required thickness is obtained. This will dry slowly, finding its way in all the joints, and give ample time to readjust the parts if necessary.



The hull complete with deck fittings

CASTINGS FOR THE "M.E." CINÉ-PROJECTOR

IT is now nearly ten years ago since the design for this sub-standard (9.5 or 16 mm.) projector appeared in THE MODEL ENGINEER, during which time many readers have built the machine and found it highly satisfactory. Enquiries are still being received for castings and parts for its construction, and we are glad to be able to report that Messrs. Roox Products, of Wellhouse Road, Beech, Alton, Hants, who marketed these parts before the war, are making arrangements to resume these supplies. There are still difficulties in obtaining some of the components, such as lenses and gears, Messrs. Roox Products propose to issue complete detail drawings and instructions for constructing the projector, including the improved features of design, with disc shutter and cam-operated claw motion. For the benefit of readers not acquainted with this design, it may be mentioned that it is extremely adaptable and can be fitted with either high- or low-voltage illumination, hand or motor drive, and will take various types of lenses. Provision is made in the design for positive feed and take-up, automatic rewind, framing adjustment and tilting. The standard spool arms take 300-ft. spools, and the changeover from 9.5 to 16-mm. films can be effected by changing the gate, the claw, and the film sprockets.



An example of the "M.E." home ciné-projector made from castings supplied by Roox Products

"L.B.S.C."

"JULIET"—THE SIMPLEST YET

HERE is a general arrangement drawing, and the first details, of the simple locomotive promised for beginners and others who have neither the skill nor equipment necessary to build the "Lassie." As long as our friend of the blue pencil doesn't mind, the few special instructions needed for doing the job, can easily be squeezed in between the "Lassie" notes. This should satisfy the good folk who are anxious to get started right away, instead of having to wait until their more experienced confrères have finished their little bit of perambulating mechanism. Builders of the simple engine should, however, read and very carefully digest all I have to say about the "Lassie," because much of the detailed instructions given for any one particular engine, is applicable to all. Useless repetition is both a waste of space, and is unfair to other readers; so let's to business.

The engine is an adaptation of the small four-wheeled shunting tanks used by the main-line railways, and by various industrial concerns. Most engines of this type are saddle-tanks, but I am specifying side-tanks, first because they are easier to make and erect, and secondly because the water in saddle tanks usually becomes hot, taking heat from the boiler, and cooling it when refilled with cold water. Eh! what's that? Why, to be sure I know there is such a thing as lagging, which can be placed between boiler and tank; but do you realise that the small boiler reaches exactly the same temperature as a big one carrying steam at the same pressure? Also that the water used to fill the tank is at the same temperature, whatever the size of the engine? Consequently, to insulate the boiler from the tank effectually, you would need a thickness of lagging approximating to that of the full-sized engine, making her look a bit comical, to say the least!

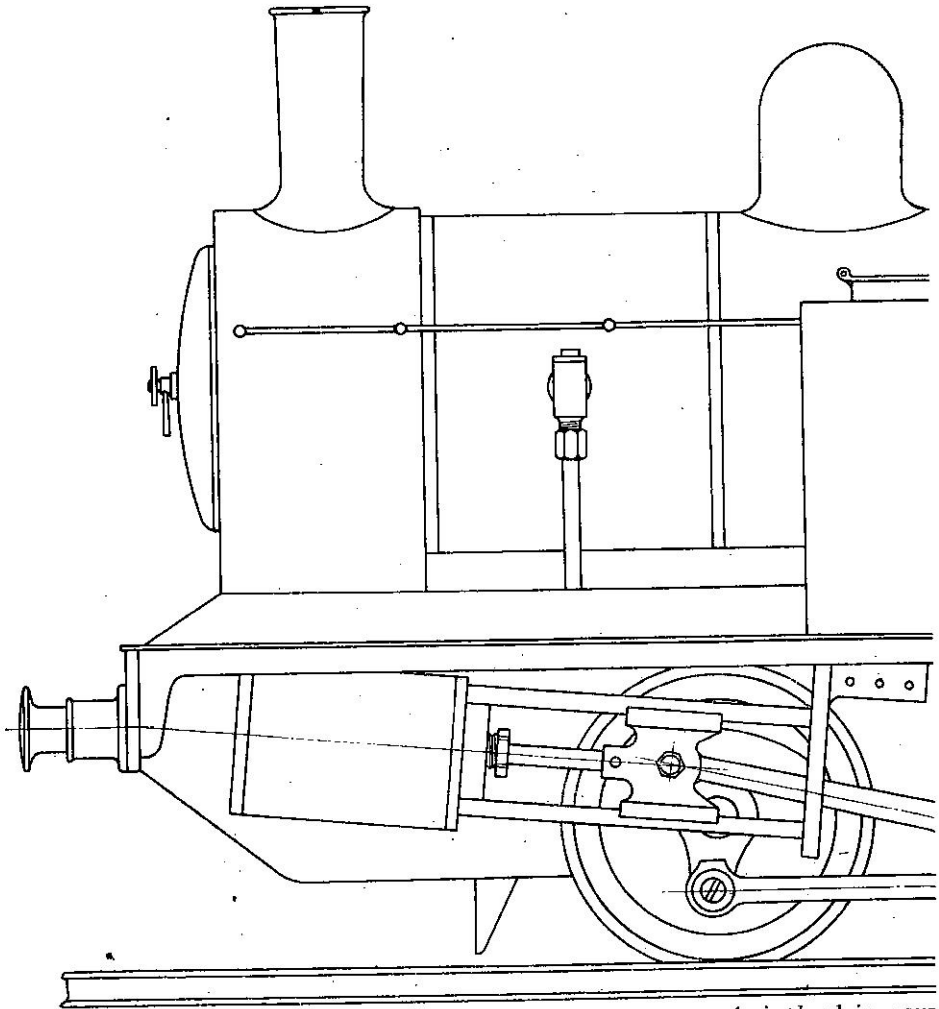
She Will Take Sharp Curves

To satisfy the good folk who are continually asking what is the minimum radius a small passenger-hauling locomotive can be made to negotiate, this one has been especially schemed out to run around the "Johnny Horners." I mentioned in the brief "foreword" that she would take a circle 15 ft. in diameter easily, but this isn't the minimum, by long chalks, as she will actually go around a circle half that diameter, provided that the driver doesn't exceed the speed limit and have her off the road. However, she would be driving on one side of wheels all the time, as the other side would be continually slipping, owing to the difference in length of the inner and outer rails of the circle. A'so, there would be a terrible bit of flange friction; and on a passenger car running on such small radius curves, the flange friction would be equivalent to having the brake partly on, the whole of the time. In addition, the weight of the rider on the car would make it very difficult for the outer wheels to slip the required amount to negotiate the curve, so that independent wheels would be needed, running loose on the axles, with the ball bearings in the wheels themselves. All these troubles would not be so much in evidence on a circle of 15 ft. diameter or over; so builders of the engine shouldn't worry their noddles about the *minimum* radius she will negotiate, but concentrate on laying out the *maximum* radius in the available space. If you can squeeze in a few feet of straight line, do so by all means, as it gives the engine a slight let-up on the everlasting flange-grinding.

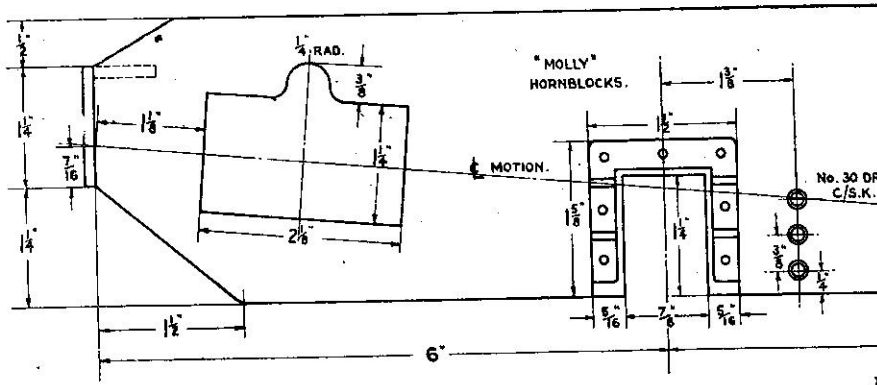
Simple Specification

The main frames are "straight line" pattern, with buffer-beams of steel angle, and one evening's work should see the whole doings cut out and erected. The horn-blocks and axle-boxes are same as "Molly" and "Iris," but no spring pins are needed, the springs being on top of the axleboxes, in plain drilled pockets, The four-coupled wheels are 3 in. diameter, which brings them below the running board and dispenses with splashers; they are a stock size. Coupling- and connecting-rods need not be fluted; the connecting-rod has a plain bushed big-end. Cylinders are same pattern as "Iris," but slightly smaller, being 1-in. bore and 1½-in. stroke, equivalent to 16 in. by 24 in. in full-size, about the average for driving four-foot wheels. They are exceptionally easy to machine and erect, being located automatically by the openings in the frame, and the steam and exhaust connections are simple. Lubrication may be by a displacement oiler, or a mechanical lubricator according to builders' skill or desire. The valves are operated by simple loose eccentrics. Nothing more is needed on a small continuous road with sharp-radius curves, as the engine does not have to be continually reversed, as on an up-and-down road; and a fairly late running cut-off is needed, on account of the tractive effort required to overcome flange-friction and one-side-wheel slip on the car carrying passengers, especially if they are heavy adults. There is also the advantage of one solitary pin-joint only, between eccentric and valve, retaining accurate valve-setting indefinitely; and the port openings can be made absolutely equal at both ends of the valve movement The rawest tyro can make and erect the gear, and set the valves, as well as any "expert."

The boiler is small, being no larger in diameter than the average 2½-in. gauge Pacific, and has a fairly deep firebox, which doesn't mean that same has to be filled up to the crown sheet—another exploded "law of the Medes and Persians!" About an inch or so of fire on the bars, should be ample, as the upper part of the firebox acts as a combustion chamber; and this



A simple 3½-in. gaug



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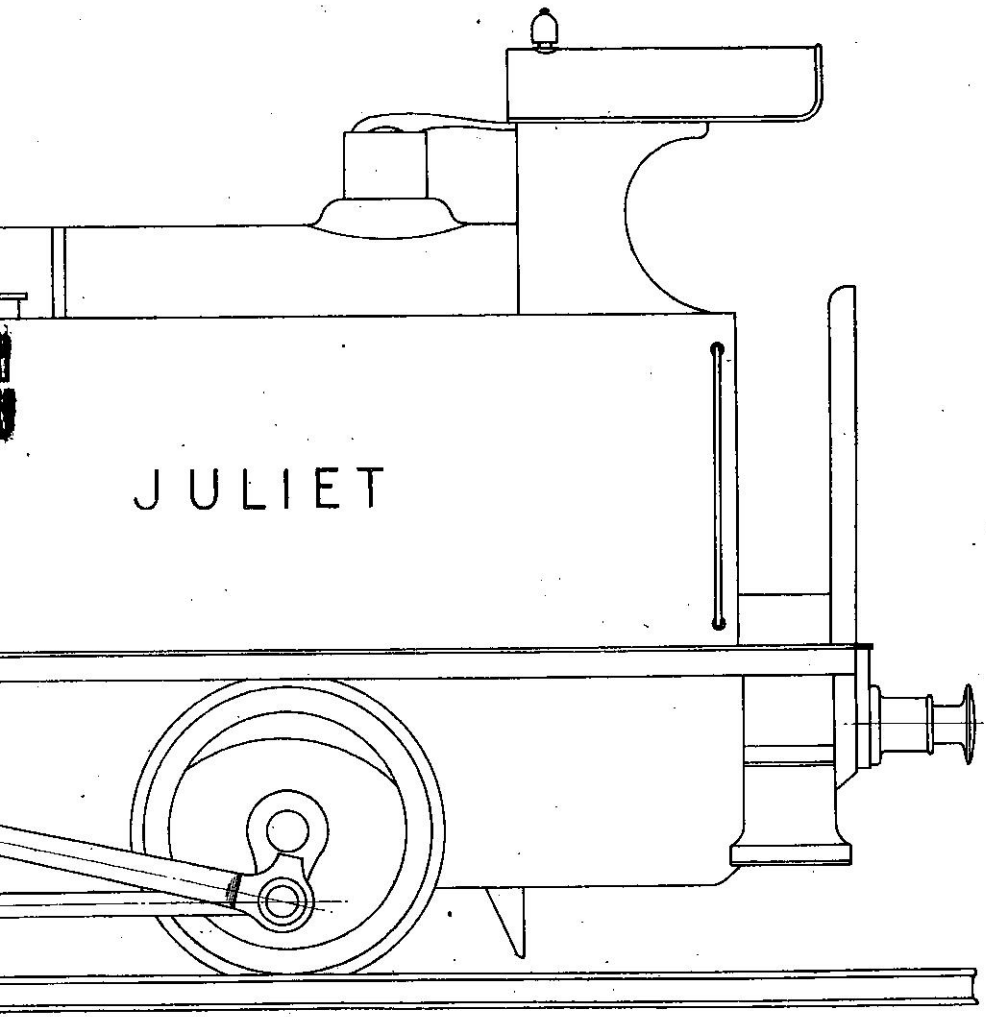
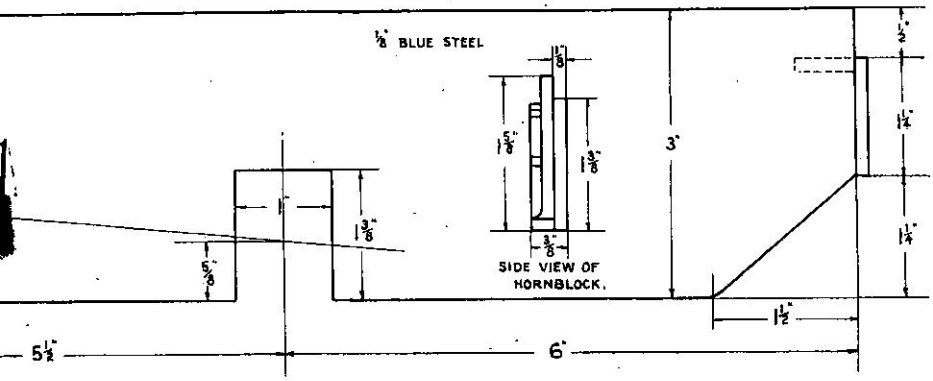
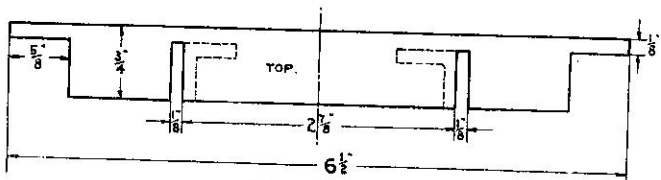


locomotive to fill many needs



me

will provide all the steam required for non-stop running with a normal load of about three adults, or two adults and two children. The engine will, however, pull much more than that, only you would need to fire her more frequently, and look after the feed-water, which is supplied by a pump driven by an eccentric on the driving axle. It by-passes direct into one of the side tanks. An emergency hand pump is also located in one of the tanks, and operated by an extension handle through the filler hole, as on my tender



Top of both beams

engines. An injector can be fitted if desired. The smokebox can be a one-piece casting, as sold for "Petrolea," which incorporates a saddle and saves a vast amount of work; or it may be built up from a piece of tube, with ring and door made from brass blanks, the whole mounted on a saddle bent up from 16-gauge sheet metal. I have shown a plain stovepipe chimney, as on "Petrolea"; but builders can, of course, turn the outside to their own pet fancy, and have a bell-top, black or polished. Either "Petrolea" or "Molly" dome casing can be used. The safety valve is a single column ball pattern (non-pop) with a Ramsbottom casing over it.

The side tanks are made from brass sheet, and each has a short piece of tube soldered to it, so that same may be connected by a slip-on rubber hose under the boiler barrel. This is quite satisfactory, as there is neither heat nor pressure to withstand. The cab has an open back, and the boiler extends into it, level with the end of the side sheets, or "weather-pieces" as enginemen sometimes call them; this makes the handles accessible. No coal is carried on the engine, the bunker sheet being cut away in the middle, to give easy access to the firehole. For firing on the run, it is easy enough to carry some coal in a small box on the leading end of the passenger car.

Apart from its ability to run on any road, and around any radius curve within reason, the engine, though powerful, is small and portable, just the ticket for taking along for a run over a friend's line; and apart from the ease of construction, the cost of the castings and material would come out less than a full set for a 2½-in. gauge engine of express or heavy goods pattern, which wouldn't even look at the curves which this small 3½-in. gauger would negotiate with ease.

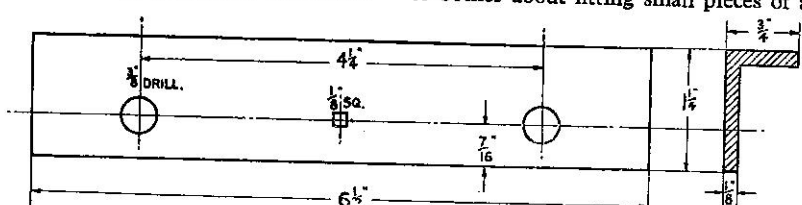
Frame Details

Two pieces of ⅛-in. soft blue steel, each 17½ in. long and 3 in. wide, will be required for the frames, which are marked out as shown, temporarily riveted together, and sawn and filed to outline. When marking-out, the only point needing particular attention, is the location of the rectangular hole for the steam chest. This is set out on the centre-line of motion; to get which, from a point 7/16 in. above the bottom of the front vertical line of frame, strike a line through the centre of the driving axle, which will be ⅝ in. above the bottom of frame, in the middle of the driving horn-slot. On this line starting at 1⅛ in. from the front end of the frame, set out the opening 1¼ in. wide and 2⅛ in. long, as shown. The little archway on the top centre is for the exhaust pipe. The screwholes behind the leading horn-slot, are for the screws holding the pump stay.

Get four "Molly" hornblock castings, and machine or file them up as described for the "Lassie." Rivet them into the slots in the frame with seven 3/32-in. rivets in each; then smooth off the lugs, and the inner faces of the jaws, with the frames temporarily screwed together "inside out" as the kiddies would say.

The buffer beams are two 6½-in. lengths of 1¼-in. by ⅛-in. by ⅛-in. angle, steel for preference, though brass would do at a pinch. If you can't easily get the unequal angle, use 1¼-in., and saw off the unwanted part from one of the angles. The illustrations show the slotting and drilling required on each; unlike a tender engine, both are alike. If steel angle is used, there is no need to bother about fitting small pieces of angle for attaching side frames; but if brass, put two short pieces of angle on the inner side of each slot, as shown by dotted lines. When assembling, the main frames are attached to these by four ⅛-in. screws in each angle.

If steel angles have been used, jam the ends of the frames into the slots in the angle; stand the lot on your lathe bed, and line up frames and beams as described for the "Lassie." Put a block of hard wood 2⅞ in. wide, between the frames, in the centre between the hornblocks, and put a big toolmaker's cramp over the lot, to prevent the frames from slipping out of alignment



Buffer-beams

ment whilst being brazed. A small carpenter's cramp will serve the same purpose. Then upend the frame assembly in your brazing pan—see "Lassie" boiler-brazing instructions last week, for requirements in the brazing line—and braze the frames to the beams, using Boron compo as flux, and ordinary soft brass wire as "spelter." This melts at bright red, runs well into the joint, and makes a sound job. Beginners remember, iron and steel is never acid-pickled after brazing; quench out in water only. The heat of the brazing operation, which can be done with a one-pint lamp or small air-gas blowpipe, won't travel far enough up the frames to burn the wood spacer. After brazing all four corners, scrape off any traces of the flux which may be sticking to frames and beams, and test again for alignment, in case anything has shifted. Next job, axleboxes and wheels.

Daylight at Night in the Workshop

It is a pretty safe bet that the great majority of the followers of these notes spend their days earning a living, and only pursue their hobby in the evenings; which means that during the next few months it will have to be done by artificial light. Now a good light is essential for accurate work, but like many other good things, it is possible to have too much of it; and a powerful electric bulb close to one's eyes is positively harmful. The late Mr. Cecil O. Purdey, who was a wonderful craftsman, told me he ruined his normal eyesight and had to use powerful glasses at quite an early age, through setting gun-sights by aid of an arc-lamp. He was the proprietor of the well-known sporting-gun firm of that name. My own eyesight is still wonderfully good, and it is hardly necessary to add that I am still doing my best to take care of it, as I have done all through life; yet friends 15 to 20 years younger, are complaining of faulty sight. One mentioned in a recent letter, that he couldn't even see to repair his lighter without glasses; I could have replied that the lighter itself was a contributory cause, as he is a heavy smoker, and tobacco smoke in one's eyes all day long, doesn't do them any good, as I learned from the books on human physiology which I studied in my young days.

As mentioned some time back in a lobby chat, I always use an eye-shade with a couple of intensifying lenses in it, when working, and thus can avoid any eye-strain; but I have often noticed that daylight is better than artificial light for working, and wished that I could introduce a spot of daylight into my workshop "after set of sun," as the poet says. A few days ago, time of writing, that wish actually became a reality, and this is how it came about.

Lighting by neon tubes, or fluorescent tubes is now fairly common in large factories, and small single units are also being produced for use in shops. Often, of an evening, I take a stroll over to the local sorting office, to get a breath of fresh air and deposit the answers to the day's correspondence in the letter box; and not so long ago I noticed that two or three of the local shops had installed fluorescent lighting units close to the ceilings, which gave a daylight effect to the whole of the floor space, a quite brilliant illumination *sans* glare and shadows. That started an idea; why not put one up in my workshop? Having a valued friend in one of the big electrical firms, I got in touch with him, with a view to obtaining one of the units to try out. He came up to scratch quite nobly, and in due course delivered a unit six feet long, consisting of a trough reflector with an oblong box on it containing all the blobs and gadgets, and underneath, in the trough, a 5 ft. fluorescent tube. Gee-whiz, thought I, now we'll be able to see where the 10-B.A. screws go when they fall off the bench; and so it proved.

I made up a couple of screwed-shank rings, screwed them into the ceiling joists, and hung up the unit as close to the ceiling as possible, connecting the two leads to the ceiling rose which had carried my central pendant fitting.

When I switched on for the first time, there were a few flashes of summer lightning as the fluorescent tube started business, and then—oh, boy! Daylight after sunset had, in actual reality, come into my workshop. At time of writing, I have only had the unit installed for a few days, but am already feeling the benefit of it, as there is absolutely no eyestrain, the light is glareless and shadowless, and the yellow tinge of the electric bulbs is entirely absent. I heard that there would possibly be strange effects, such as the lathe chucks apparently going the wrong way, but have not found anything different. Anyway, I am highly delighted with the improvement; and—tell it not in Gath!—the Scottish part of my make-up rejoices in the reduced current consumption, the tube using less than an ordinary 100-watt bulb; loud cheers from Mr. Shinwell!

THE STEPHENSON LOCOMOTIVE SOCIETY

A red-letter day in the Society's programme of outdoor visits during the past summer was the tour of the Longmoor Military Railway and Training Establishment in Hampshire, by courtesy of the Commandant and Officers, who provided every facility for the party. Travelling by special train hauled by a W.D. 0-6-0 saddle tank, which included in its formation an F. W. Webb *ex*-L. & N.W. 6-wheeled saloon, a tour was made of this remarkable line and its more recent extension, calls being made at the well equipped signalling school as well as at the prefabricated-bridge depot. Among the locomotives were seen *ex*-M. & G.N. Joint, L.B. & S.C., Taff Vale, North Stafford, and G.W. representatives as well as diesels, Ministry of Supply 2-8-0s and 2-10-0s, some being painted blue and named.

By kindness of the L.N.E.R. a largely attended visit to the works and Running Sheds at Doncaster provided much of interest to general observers also to those members specialising in photography.

The Society's permanent headquarters opposite Addison Road Station, Kensington, London, W.14, was opened in October.

General Secretary: H. C. CASSERLEY, Ravensbourne, Berkhamsted, Herts.

* MILLING IN THE LATHE

By "NED" **Section 3—The Vertical Slide**

A general review of the principles, appliances and methods employed for adapting the lathe for various types of milling operations

IT will be fairly evident that most of the operations described in the previous section can be performed with greater facility and convenience by using the vertical slide, as this eliminates the need for packing as a means of height adjustment, and provides a means of traversing in a vertical direction, either to adjust the width of cut or to take two or more cuts at different height levels.

Port Cutting

This advantage is particularly useful in such cases as the milling of ports in cylinders by the method described in Fig. 16 (page 252, September 12th issue), as it dispenses with the packing blocks, and enables the height of the cylinder to be adjusted for each successive port position by traversing the vertical slide. It will, however, be noted that a certain degree of rigidity is sacrificed by this method of mounting, and there may be greater difficulty in securing the cylinder block to the slide in the correct position for carrying out the milling operation.

In the example illustrated in Fig. 30, the cylinder block is attached to the slide table by means of two small angle brackets (which may be cut from a length of angle section material of appropriate size) and a single bolt through the

*Continued from page 410, "M.E.," October 24, 1946.

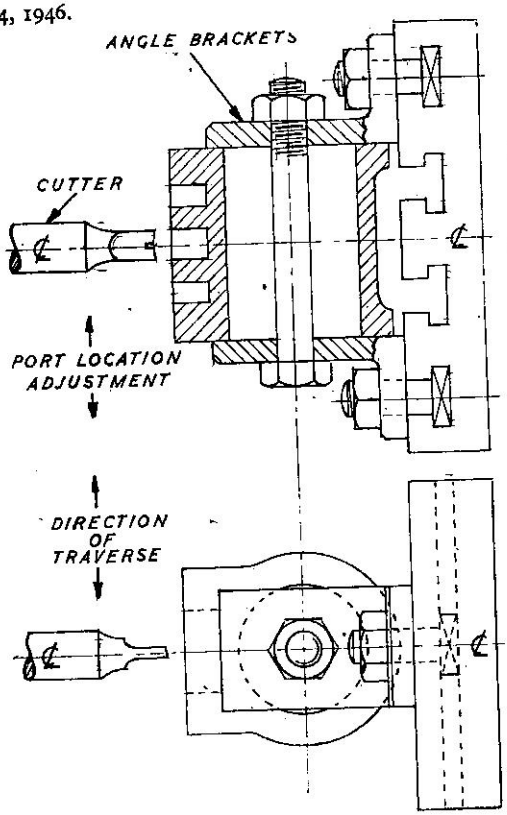


Fig. 30. Steam cylinder-block mounted on vertical slide for milling ports

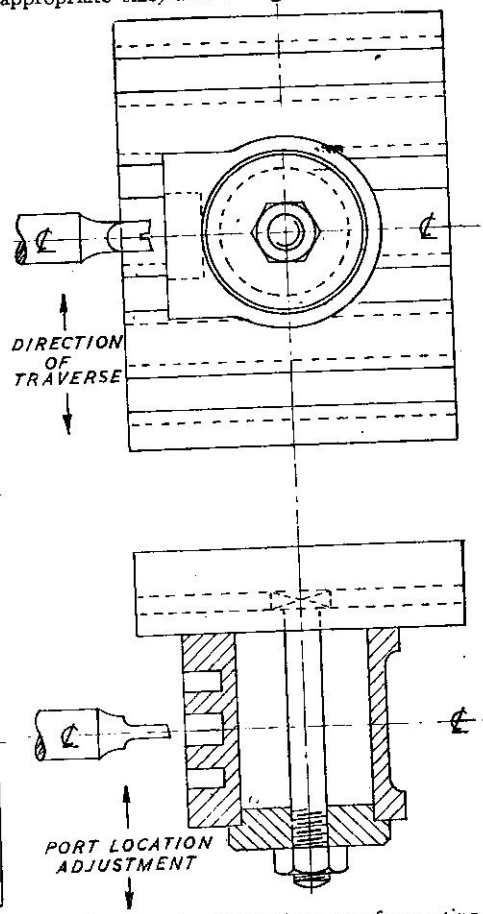
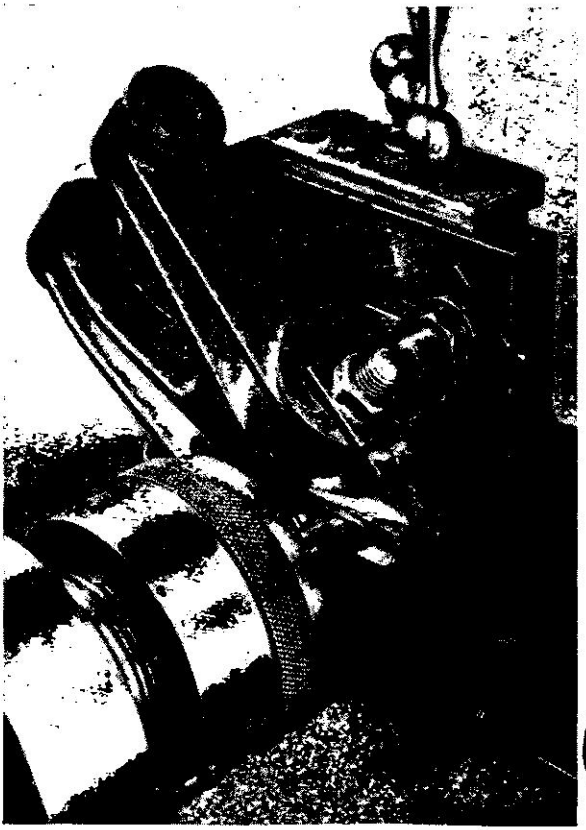


Fig. 31. An alternative way of mounting cylinder for port milling



Slot milling the jockey pulley lug on headstock casting of the "M.E." drilling machine

cylinder bore. This holds the work more rigidly than is usually possible with a single angle plate of the size which can comfortably be accommodated on the table of a small vertical slide. Location and spacing of the ports are, of course, effected by elevating or lowering the slide table, and the cross slide is traversed to cut the ports to the required width.

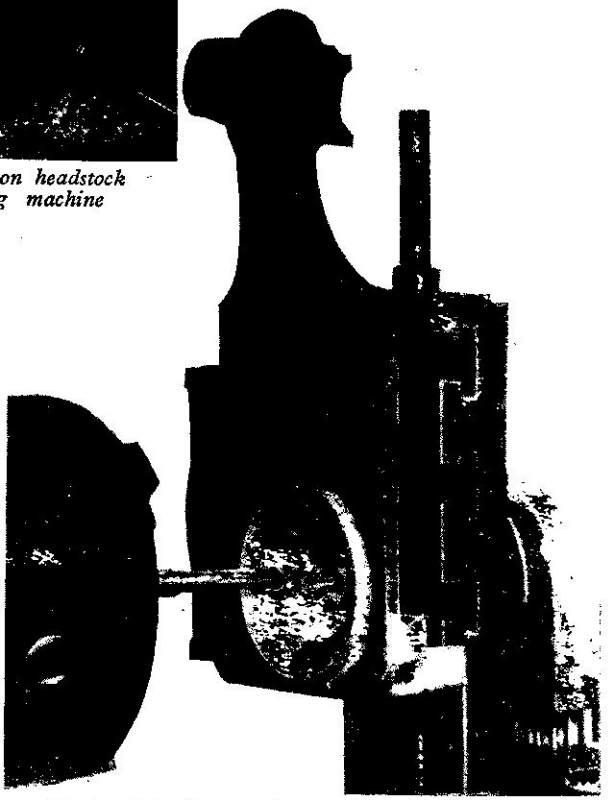
There is, however, an alternative way of dealing with this job when a vertical slide is used. The latter is mounted on the cross slide with the table surface parallel with the lathe centres, as shown in Fig. 31, and a single bolt, passing through the cylinder bore as before, is used to secure it to the slide, with the port face in a vertical plane. In this way, the cross slide is used to adjust the location and spacing of the ports, and the vertical slide used to traverse the work across the cutter to produce the required width of the ports.

Whichever method is used, accuracy in port location and spacing now depends on the adjustment of one or other of the slides, and the careful use of either the slide index, or some other positive means of measurement, is necessary to ensure correct setting. It is also necessary to watch out for any possibility of the adjustments shifting under vibration ; tightening up the gibs of all working slides, so that they work stiffly, is a wise precaution, and it may sometimes be found desirable to lock them positively in a set position.

End Fluting and Slotting

In fluting connecting-rods by end-milling methods, the tapering of the flutes can be arranged very easily if a vertical slide having provision for swivelling about a horizontal pivot is employed. The swivel is first adjusted so that the top side of the flute is horizontal, and after cutting this side the required depth, readjustment of the swivel to bring the lower side horizontal, and a second cut to the same depth, completes the operation.

Sometimes it is much easier to set up work on the vertical slide than to set up a stationary bolting fixture. This was so in the case illustrated



Slotting holes in cam-plate seating of lathe apron

in the photograph, which was a further operation on the lathe apron mentioned on page 205 of the August 29th issue, and consisted in milling the slots for the lifting pins of the half-nuts, which pass completely through the seating of the cam-plate. The illustration is largely self-explanatory, but it may be mentioned that in this and other photographs taken for explanatory purposes, the cutter projects further from the chuck than is desirable from the practical point of view; the object being to enable the essential parts to be seen more easily. As already explained, cutters should always be held as close up to the cutting edge as possible, to facilitate rigidity.

Another slot-milling operation which was conveniently dealt with by mounting the work on the vertical slide is shown herewith, namely, the slotting of the jockey pulley lug on the headstock of THE MODEL ENGINEER drilling machine. This operation necessitated holding the casting at an angle of 45 degrees to the plane of the column and spindle centre lines, so as to bring the centre of the slot horizontal. Several methods of securing the work to the vertical slide were practicable, the most convenient in the particular circumstances being by the use of small angle brackets and a bolt through the bore of the casting, as shown.

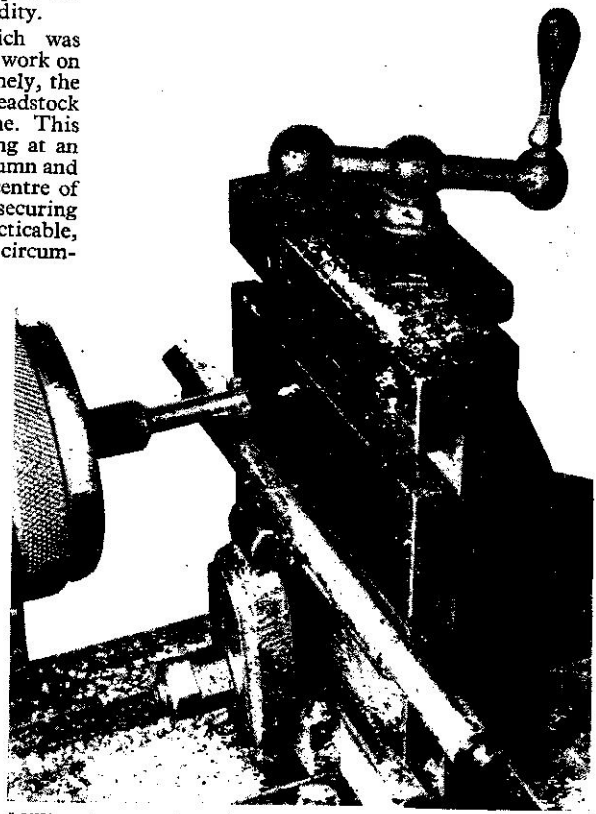
Before setting up the work, the centre line for the slot was marked out, and a previously marked centre line, through the spindle and column centres, was used for setting the casting truly parallel to the surface of the vertical slide table. To bring the centre line of the slot horizontal, the swivelling adjustment of the slide was used, this adjustment being checked by means of a scribing block laid on the lathe bed, with the scriber point set exactly to centre height.

In order to reduce the amount of work entailed in milling the slot, a drill was first used to produce a row of holes closely spaced across the width of the slot and almost its full diameter. The end mill was then employed to produce a continuous slot, a larger-sized end mill being used to face the surface of the lug, and a "rose-bit" or countersink used to produce the seatings for locating the jockey pulley spindle. Both the latter operations were repeated on the other side of the casting.

When cutting keyways in shafts, either by end or side milling, the vertical slide not only provides location or depth of cut adjustment, but also a very convenient mounting to locate the shaft so that it is easily secured by a single light clamp. This is done by making use of one of the tee slots in the table in lieu of a vee block, as shown in the photograph, which illustrates the cutting of the keyway in the spindle of THE MODEL ENGINEER drilling machine. As the edges of the tee slots are slightly chamfered, and it is not necessary to use very great pressure on the clamp, bruising of the shaft is avoided, but if highly-finished work is being dealt with, a slip of copper or aluminium foil may be interposed to protect the surface. In the example shown, a slip of sheet fibre was placed between the work and the toe of the clamp, but no packing was used in the tee slot. The cutter, incidentally, is a home-made one, machined from silver steel in one piece, including the shank; it has six teeth, filed by hand, and it has been used for many and diverse operations, including cutting ports in steam engine cylinders.

In cutting keyways by this method, it is important that the cutter should be properly centred, otherwise the keyway will be "out of square," or more correctly, radially offset relative to the shaft. When possible, it is a good idea to present the cutter to the end face of the shaft, where its crosswise position can be measured from both sides; the provision of a temporary "pip" at the end of the shaft, equal in diameter to the width of the cutter, is a great help in setting. If, however, it is not practicable to use this method, due to insufficient traversing scope, or other means, measurement may be taken from one side of the shaft to the cutter, using a depth gauge set to half the diameter of the shaft, less half the width of the cutter. Care must, however, be taken to keep the gauge quite square with the work, to avoid the possibility of a false reading.

The squareness of the table surface of the slide, relative to the lathe axis, is also highly important in this and many other operations. A very sound



Milling keyway in spindle of the "M.E." drilling machine

method of setting up the slide to ensure this is illustrated in Fig. 32, in which it will be seen that the faceplate of the lathe is used as a reference surface (assuming that it runs quite truly), and measurements taken from the front and rear sides of the slide surface, as close to the edges as possible, by means of inside callipers or other accurate means of gauging. Measurement with a rule is not good enough. Sometimes it is possible to run the slide up into actual contact with the faceplate, but if this is done, the possibility of the slide being forced out of truth when finally tightened down should not be overlooked, and a check-up with callipers should be made to guard against this.

When setting up the slide in a position parallel to the lathe axis, a similar check can be made by using a parallel mandrel between the lathe centres, as shown in Fig. 33. In this case it is assumed that the centres are properly aligned for parallel turning, and that the mandrel, in addition to being parallel, runs truly on its centres.

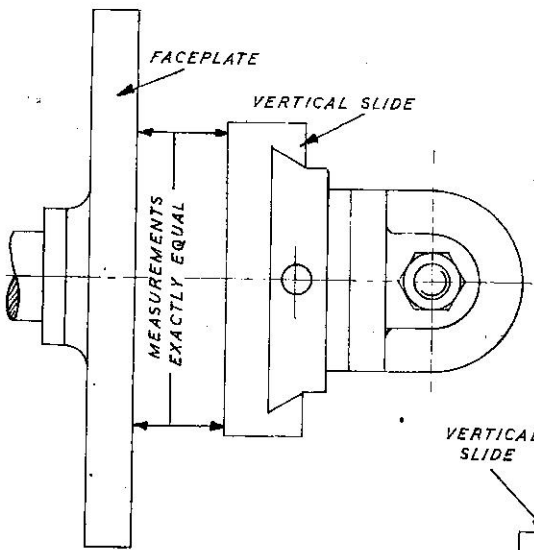


Fig. 32. Setting vertical slide at right-angles to lathe axis

Checking Accuracy

Most vertical slides, even the most inexpensive makes, are reasonably accurate, but nothing should be taken for granted in this respect when setting up the slide for an operation which calls for a close limit of precision. A slight burr or a speck of swarf under the foot of the slide may throw it out of truth on the vertical face; or the surface of the cross slide may not be perfectly parallel with the lathe axis. The perpendicular accuracy of the slide table is best checked by the same means as that used for checking the squareness of a drilling machine table; most readers will be familiar with this, but for the benefit of those who are not, here it is.

Mount a scriber point in the lathe in such a way that it can be made to describe a circle practically equal in diameter to the width of the slide table. A simple way of doing this is to take the scriber and clamp block of an ordinary surface gauge and attach it to a piece of steel bar the same diameter as the pillar of the gauge, held in the lathe chuck. The distance between the scriber point and the slide table should be the same at all points of rotation if the slide is accurate and properly set up all ways.

Should any error be apparent when this test is made, do not hesitate, or consider it *infra dig*, to adjust matters with a slip of thin packing—metal, fibre or even paper—under the foot of the slide; it is a much quicker and more effective remedy than reviling the makers of the vertical slide, or sending the offending components to them for correction.

Squaring and Levelling

The squareness of the slide is sometimes tested by means of a try-square set on the lathe bed, but this assumes that the latter is truly parallel with the axis of the lathe mandrel, which is not always correct. A square may be used for checking the vertical accuracy of the side edge of the slide table, however, and is useful when setting a swivelling slide to the perpendicular position. A scribing block may be used for checking horizontal accuracy of work held on the slide, and if the scriber point is set exactly to centre height, will serve for centring the work for end milling.

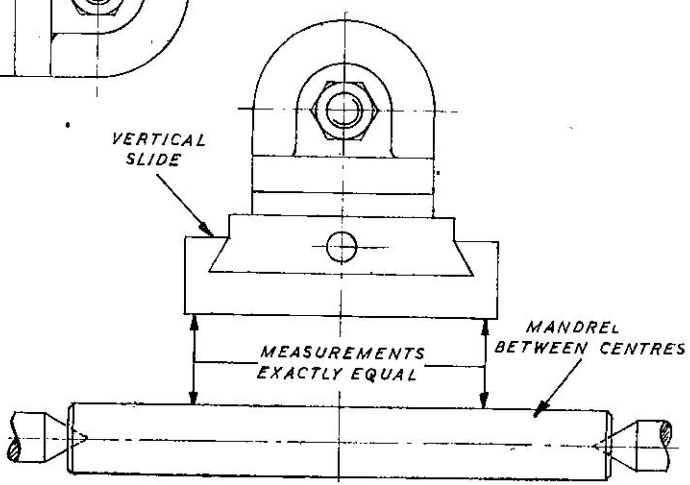


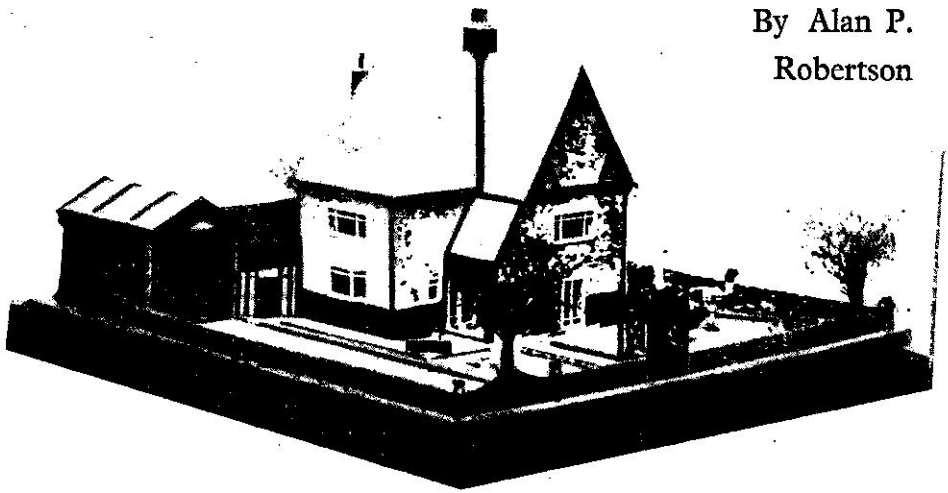
Fig. 33. Setting vertical slide parallel to lathe axis

The use of the vertical slide for carrying dividing attachments or milling spindles will be dealt with in the sections referring to these appliances.

(To be continued)

An ARCHITECTURAL MODEL

By Alan P. Robertson



THESE two photographs show my latest example of model architecture which was recently awarded first prize and an award of merit at a local show.

Approximate measurements are 8 in. × 8 in. × 7 in., on a base 2-ft. square, and the model is completely furnished throughout on modern lines; all rooms are electrically wired and the house is planned on two floors, as follows :—

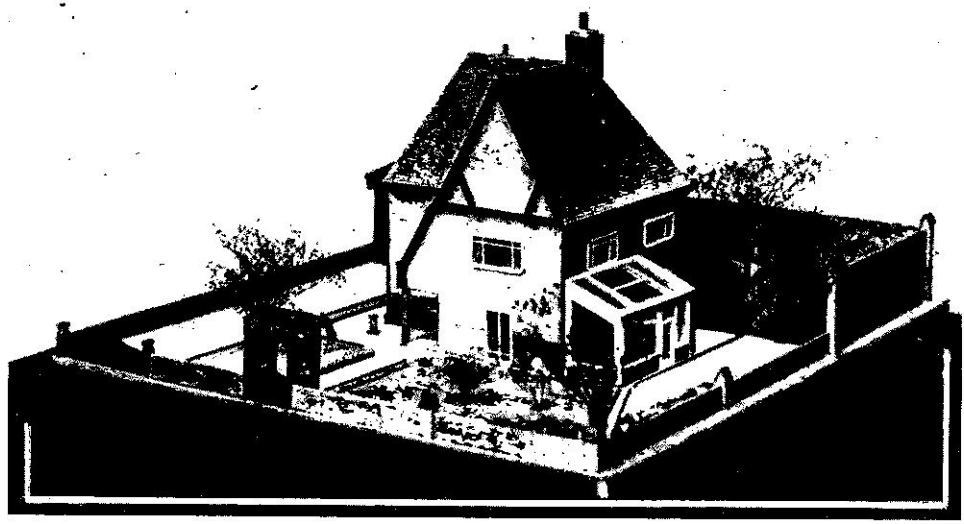
Ground floor.—Bay-window sitting room, dining-room, opening to adjoining conservatory, kitchen, hall, and panelled staircase.

First floor.—Two bedrooms, hall, bathroom, and lavatory, etc.

Standing in its own grounds, there are vegetable and flower gardens and children's playground at the rear, and the villa is fronted by rockeries, lawns, and spacious conservatory. The trees are made from natural gypsophila plant. All outside details are incorporated on the model, grates, ventilators, gutters, drainpipes, etc.

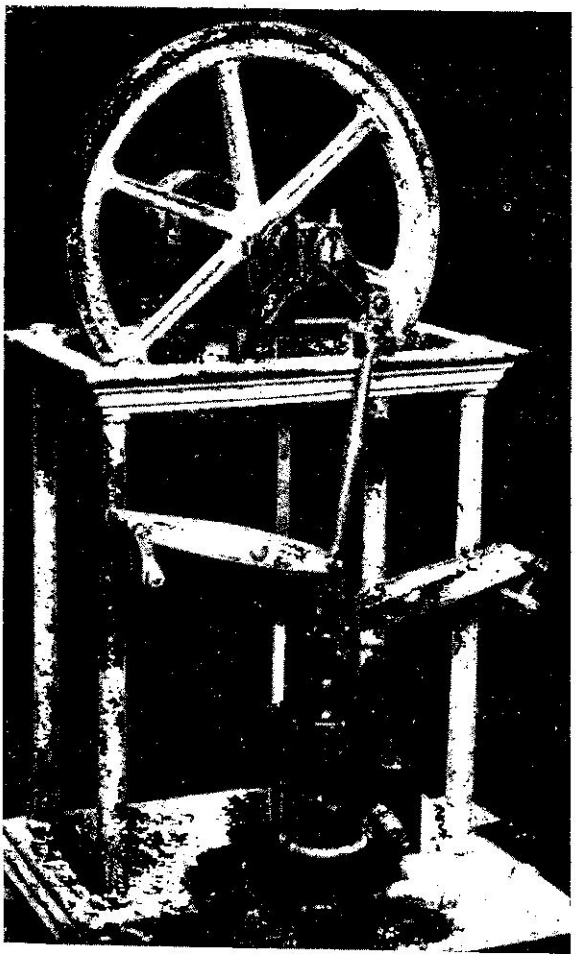
Housed in the garage are two grid bias batteries and red and black switches (press-stud) behind the garage provides light for each room.

Independent wiring enables the red switch to light up the ground floor rooms, whilst the black switch illuminates the rooms upstairs, thus revealing details of the very small furnishings.



STEAM COLLIERY WINDERS

By F. J. Lewitt



WITH reference to the photographs of the pit engine by Mr. Howlett, in THE MODEL ENGINEER of June 13th, and the letter by Mr. Smith in the issue for July 11th, it would be interesting indeed to have further information regarding this particular model, and of the original.

Although I have not seen any colliery winders having this arrangement, there are several still in use in County Durham, with the cylinder fixed at floor level and the winding drum above; valve gear is practically the same as shown in Mr. Howlett's photographs, except that in some cases the Watt type of valve, which is lifted by a rack and pinion movement enclosed in the steam chest, is used. The valves in Mr. Howlett's engine appear to be of a later type and similar to those used on Cornish pumping engines about the 1840's.

At the end of the 1914-18 war these vertical winders were quite common in Northumberland and County Durham, but many have since gone to the scrap heap, due to electrification schemes. Some of the remaining ones have been working for over a hundred years and are still going strong. None works at very high steam pressure, and a few are fitted with condensers, but all drive direct on to the drum. Twenty-five years ago there were one or two cases where flat winding ropes were used, the rope winding upon itself between flat spiders, thereby obtaining the equivalent of a coned drum for lifting the cage from the bottom of the shaft.

I have endeavoured to find the original of these old winders, but it appears to be lost in antiquity. The one discovery I made was in an old book on "The Steam Engine," published in Newcastle, about 1831, which gave an outline drawing of a vertical engine, patented by one Phineas Crowther, a millwright, of Ouseburn, Newcastle, in 1800. This engine had the crankshaft above and the crosshead was guided by radius links, as in Mr. Howlett's model. (This radius linkage by the way, was Watt's first form of parallel motion, according to Muirhead, in his "Patents of James Watt," published about 1844.) Unfortunately, the sketch of Crowther's engine did not show any valve-gear, so I am still uncertain whether he or someone else at a later date, was responsible for applying plug-rod operated valve-gear.

At present, as opportunity offers, I am collecting all the information I can about these old winders, as there is a possibility that they may soon disappear in the rush to modernise the coal mines. Records are either scanty or non-existent, and most items of historical interest appertaining to them have been handed down verbally through successive generations of colliery engineers and winding men.

Some time ago I acquired the engine shown in the reproduced photograph. I found it lying on a dump in one of the remote mining villages of Northumberland. It shows the Crowther arrangement, but is fitted with a slide-valve operated through bell crank levers, as on the later examples of Watt steam engines. I was able to trace some of its history and it appears to be one of several models made by the engineer at Settlingstones Mine, over 50 years ago.

The parallel linkage and the connecting-rod are a real workmanlike job, but all bolts appear to be hand made. There may have been an air pump and feed pump at one time but these are now missing.

To give an idea of its size, the flywheel is about 16 in. in diameter.

Letters

Model Turbines

DEAR SIR,—It was with great interest that I read the appreciation and constructive criticism of Mr. J. H. Johnston's articles on Small Turbines by Mr. W. H. Elkin; for I consider Mr. Elkin to be "2" or "3" stages further ahead than myself in the problem of reliable coefficients for use in design of these engines.

I was a member of the "Coburg (Aust.) Model Power Boat Society," and was mainly concerned with designing and constructing safe, reliable steam plants for prototype craft. However, after using economisers, feed water heaters, and induced draft; little, other than vacuum condensers, could be done to increase the efficiency of the plant; or, chiefly the boiler for that is where the power is developed, provided the engine has kept to the principles of Our Chief Steam Saver, "L.B.S.C." Having used small water capacity, multi-tubular boilers of "Babcock and Wilcox" design, and reliability being considered of greater importance than mere speed, I was not prepared to use a flash steam generator with its attendant blowlamps and pumps, both water and oil; to obtain a higher powered boiler of a comparative size to the one in use. This left me considering the turbine as a more efficient engine having, also, once it was operating successfully, far greater reliability and less maintenance than the reciprocating engine.

Deciding to try to benefit from many weary hours spent, during my schooling, on turbine design, I set off full of confidence, that I would have at least a basic design established before starting construction; but, immediately the problem became "Could frictional coefficients established in larger turbines be applied?" and "What are the evaporative powers of model boilers?" As my immediate requirements were for a particular boiler and elementary test equipment was not available I changed over to "trial and error" to obtain a turbine design balanced against the boiler in use, no attempt being made to measure horse power, jet velocity, frictional coefficients, etc. The matching of the turbine to the boiler is considered of high importance, as it is easy to develop phenomenal powers from small engines and turbines when connected to outsize in boilers; but when the unit has to be installed in a reasonable sized craft, apparently successful engines have repeatedly failed.

Without going into details of the trial designs, except to say they followed Mr. Johnston's methods, the results were far from satisfactory when compared to the reciprocating engine, but definite indications to the faults in construction were apparent. These faults have, I consider, been eliminated from Mr. Elkin's successful turbine, and Mr. Johnston was led astray by his failing to recognise the fineness and accuracy of finish required to compare with the size of jet working on these surfaces. I definitely agree with Mr. Elkin that high speed, high pressure turbines will be the most efficient for the average model engineer; unless, of course, one can successfully scale a modern multistage low pressure turbine with its close clearances.

However, there are two features which I think may improve Mr. Elkin's performance: Firstly, a blade of approximately three jet diameters in depth to allow the steam a direct passage across the blade without interference by the shrouding causing the steam to be spun with the wheel giving centripetal force tending to throw the steam out radially. This may be why the shrouding when fitted gave such a marked increase in speed on light running. Secondly, I found with encased unshrounded rotors that a tangential exhaust of a diameter equal to the inside casing width placed between 90 and 180 degrees ahead of the jet gave better results. From the photograph, Mr. Elkin appears to have the exhaust in the casing side almost opposite the nozzle.

Mr. Elkin's article was discussed with a fellow exile who has installed major turbo-electric plants throughout Eastern Australia. He was astounded at the speed recorded above and suggested that this could be increased by 30 per cent. or more by the fitting of a simple jet or surface condenser to the exhaust. This has been proven beyond all doubt in larger designs.

Perhaps my greatest help to Mr. Elkin can be with reciprocating engine figures which are given below for two plants running at constant speeds.

Type of craft	Type of boiler	Boiler heating surface sq. in.			Type of fuel	Boiler pressure lb./sq. in.	Size of water pump	Remarks
		Drums	Tubes	Total				
Fast mail steamer 42" × 6" × 3¼" draught	Dual drum with Babcock & Wilcox pattern tubes	85	30	115	Meth. spirit natural draught	25	⅛" × ⅛" direct driven	Feed water heating used
Cabin launch 32" × 7" × 2¼" draught	do.	54	40	94	Meth. spirit induced draught	30	7/64" × 9/64" direct driven	Feed water heating and economiser used

Type of engine	Size of engine	Approx. R.P.M. under load	I.H.P. at 50% boiler pressure	Type of prop.	Size of prop.	Approx. speeed M.P.H.
Single cylinder double action Stevenson's reverse gear non-condensing	⅜" × ⅜"	1,000	.012	4 Bladed power screw	3" diam. × 7" pitch	1.5
Single cylinder double action non-condensing	½" × ⅝"	1,600	.015	2 bladed speed screw	2½" diam. × 9" pitch	2.5

I hope, when I have again a fixed abode, to resume work on the small turbines, and I would like to express my thanks to Mr. Elkin both for his publishing details obtained by hard work and thought, and the excellent "summing-up" of Mr. Johnston's article, which I consider it required.

Yours faithfully,

British Commonwealth Occupation Forces, Japan. J. HENSHALL.

Calling Kenley

DEAR SIR,—I write to inform you that the Kenley and District Community Association has now been formed. As you are doubtless aware, associations of this nature are backed by the London Council of Social Service, and consequently receive material help from local authorities.

Our Association aims at bringing together the residents of the district in recreational pleasures, such as concerts, dancing, sports, musical and dramatic arts, etc. It has been suggested that a section might be devoted to model engineering. With this end in view, may I appeal through your journal for fellow residents of the district to get into touch with me.

I might add that the Association expects to erect a community centre to house such activities as have already been enumerated. In other words, if sufficient support is secured for the model engineering section, space for a workshop will be allocated to us.

So far as I can see, this will be something different in the usual form of social or club, and has great possibilities.

In the meantime I will be more than pleased to offer my house and workshop as a meeting place for fellow enthusiasts.

Yours faithfully,

5, Hayes Lane, Kenley, Surrey. EDWARD N. FLETCHER.

Electric Gloves

DEAR SIR,—I wonder if any of your readers can help me or put me into touch with someone who can.

I have just bought a pair of the R.A.F. electrically-heated gloves that are on sale now, for use on my motor bicycle, but, of course, they are 24 volt. I think re-winding the gloves to 6 volts would be rather difficult.

Therefore, the answer seems to fit a special dynamo to generate 24 volts, and about 5 amps. Alternatively, could an old 6-volt dynamo be re-wound to 24, or, lastly, could one of the many rotary transformers now on the market very cheaply be utilised by re-winding the high tension side?

If anyone will undertake to design suitable winding for a standard motor bicycle dynamo I shall be pleased to pay any reasonable fee.

Yours faithfully,

Great Missenden. NORMAN PRETTY.

Clubs

Society of Model and Experimental Engineers

There will be a "Brains Trust" meeting on Saturday, November 9th, at 2.30 p.m. This will be held at 39, Victoria Street, Westminster, S.W.1. Members are invited to submit to the secretary such questions that they desire to be answered by the "Brains" at this meeting. These questions will then be collected and the necessary team appointed. These latter will have no prior information as to the nature of the questions they will be expected to answer. Please remember, the success of these "Brains Trust" meetings depends upon the number and variety of questions put forward.

A visit to Smiths of England, the makers of the well-known electric clocks, has been arranged for Thursday, November 14th. Will those members who wish to attend, but have not yet given in their names, please advise the secretary at once.

Secretary: J. J. PACEY, 69, Chandos Avenue, Whetstone, N.20.

Leicester Society of Model Engineers

On October 19th, a party of members visited Messrs. Myfords Works, at Beeston, Nottingham, and the Attenborough Model Railway, close by. A most interesting and enjoyable afternoon and evening was had by all, and our thanks and appreciation are due to Mr. C. Moore and Mr. E. Barrs, and the members of the Myford staff who conducted the party round the works; and to Mr. J. H. Gibbons, the builder and owner of the Attenborough Model Railway.

The next meeting will be held on November 12th, at 7.0 p.m., at 9, Wellington Street. Will all members please attend this meeting to receive the exhibition report.

Hon. Secretary: E. DALLASTON, 67, Skipworth Street, Highfields, Leicester.

Stockport and District Society of Model Engineers

Membership is increasing rapidly and we are well on the way towards our first local exhibition. All lone hands in the neighbourhood are cordially invited to attend any of our meetings, held on the first and third Fridays in each month, at the Dyers and Bleachers Club, Tiviot Dale. Commence 8.0 p.m. prompt.

Mr. James Mayo, a local "wit," conducted the "mock" auction at our last meeting, and kept members so convulsed that the society's fund benefited by members forgetting to be cautious with their bids.

For the meeting on Friday, November 15th, our member, Mr. Whiston, will give his talk on "Crewe Works and After."

Hon. Secretary: E. TERRY, 17, South Parade, Bramhall Lane, Bramhall, Stockport. Phone: Bramhall 577.

The Bristol Society of Model and Experimental Engineers

Our meeting, on Thursday, October 10th, was taken up by a talk from our member, Mr. L. F. Redman, on the "Dividing Head" and its uses, which was supplemented by displaying to

the members two types of dividing head, and explaining how they worked, and exhibiting the results in various forms.

We shall be pleased to welcome any visitors to our future meetings, which are held at St. Nicholas' Parish Hall, Trinity Place, on the following dates:—November 7th, November 21st, December 5th, December 19th.

Hon. Secretary: C. C. LUCY, 28, Bibury Crescent, Henleaze, Bristol.

The Bolton and District Society of Model Engineers

The next meeting of the Society will be held on Tuesday, November 12th, 1946, when the speaker will be Mr. N. Gaskell, the subject being "Valves and Valve-Gear."

Hon. Secretary: A. H. BOOTHROYD, 113, Hilton Lane, Little Hulton, Nr. Bolton. Tel.: WAL 2352.

The Junior Institution of Engineers

Friday, November 8th, at 6.30 p.m.—39, Victoria Street, S.W.1. Ordinary meeting. "Sugar Beet and Engineering," by H. W. Arkell, M.Inst.F. (Member).

Saturday, November 9th, at 7.0 p.m.—Annual dance to be held in the Paviour's Arms, Page Street, S.W.1.

North Western Section. Monday, November 11th, at 7 p.m.—Manchester Geographical Society, 16, St. Mary's Parsonage, Manchester. Ordinary meeting. "Modern Factory Lighting," by J. W. Howell, D.L.C., M.I.E.E., F.I.E.S.

Friday, November 15th, at 6.30 p.m.—39, Victoria Street, S.W.1. Annual general meeting.

Sheffield Section. Friday, November 15th, at 7 p.m.—Metallurgical Club, West Street, Sheffield. Ordinary meeting. Paper, "Town Planning," by J. M. Collie.

Friday, November 22, at 6.30 p.m.—39, Victoria Street, S.W.1. Ordinary meeting. "Liquid Spring Development," by A. E. Bingham, M.I.Mech.E., F.R.Ae.S. (Member).

Wolverhampton Model Engineering Society

Good progress is being made on the new track which is being erected on the land adjoining the Mount Pleasant Inn, Ormsdale, Near Wombourne, Wolverhampton, where the members attend Tuesdays and Thursdays, at 7.30 p.m., and Sundays at 10.0 a.m. Will all members please make a special effort to come to the site at the times indicated as often as possible—there is plenty of work for everyone. Visitors will receive a special welcome.

Hon. Secretary: R. HOOD, 72, Canterbury Road, Penn, Wolverhampton.

Malden and District Society of Model Engineers

The Malden Society's Autumn Exhibition will be held on Friday, Saturday and Sunday, 22nd, 23rd, and 24th November, 1946, from 11.0 a.m. to 9.0 p.m., at the Graham Spicer Institute, Malden Road, New Malden.

There will be an enlarged Competition Section, and all entries will automatically be judged for the "Malden Medal of Merit"—awarded for outstanding craftsmanship.

All model engineers are invited to enter the Competition Section, and full details and entrance forms can be obtained from any of the following: Hon. Secretary: H. A. HAMMETT, 9, Norman Avenue, St. Margarets, Middlesex; Assistant Hon. Secretary: G. T. TOLLETT, 9, Chilmark Gardens, New Malden, Surrey; or from G. F. TONNESTEIN, 7, Thetford Road, New Malden, Surrey.

Wicksteed Model Yacht and Power Boat Club (Power Boat Section)

The power boat section of the above club entertained members of the Northampton Model Engineering Society on Sunday, October 13th. Many prototype boats were running, including two winners of prizes at the recent MODEL ENGINEER Exhibition. Visitors were also present from Bedford and Coventry. Tea at the Park Pavilion ended an enjoyable afternoon's sport.

Hon. Secretary: H. C. WARD, 20, College Street, Irthlingborough, Northants.

Northampton Amateur Model Engineering Society

This Society is now installed in its new permanent club room at the Bull and Butcher Inn, Bridge Street, Northampton.

The Society announces with pride that two of its members, Mr. S. Tilley and Mr. A. M. Welter, were successful in being awarded the championship cup and a bronze medal, respectively, in the Marine Section of the 1946 show.

The last meeting was greatly enlivened by the ceremony of "Wetting the Cup."

The two prize-winning boats and others were sailed on Sunday, October 13th, at Wicksteed Park Lake, Kettering, by courtesy of the Wicksteed Model Yacht and Power Boat Club.

The Society welcomes enquiries from prospective new members.

Hon. Secretary: W. A. WELLS, The Guest House, Moulton, Northants.

Edinburgh Society of Model Engineers

Our first meeting of the new session will be held in the Society's Rooms on November 30th, at 3.15 p.m., when Mr. A. J. Brown, of Glasgow S.M.E. will give a lecture on "Ship Design." All interested are welcome.

Clubroom and workshop, 1a, Ramsay Lane, off Lawnmarket.

Hon. Secretary: JAS. H. FARR, Wardie Garage, Ferry Road, Edinburgh, 5.

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Readers desiring to see the Editor personally can only do so by making an appointment in advance.

All correspondence relating to sales of the paper and books to be addressed to THE SALES MANAGER, Percival Marshall and Co. Ltd., 23, Great Queen Street, London, W.C.2.

Correspondence relating to display advertisements to be addressed to THE ADVERTISEMENT MANAGER, "The Model Engineer," 23, Great Queen Street, London, W.C.2.

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Split Chucks for Watchmakers' Lathes, 6 mm., 6½ mm., and 8 mm., at 7s. each, postage 6d.—JOHN MORRIS, 64, Clerkenwell Road, London, E.C.1.

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Going Cheap. Selection of new Drills, and used, but good, parallel Reamers and Taps. S.A.E. for particulars.—DIBDEN, 29, Willowfield Road, Eastbourne.

Sale, Hand Bench Shaper, 9 stroke, automatic feed, £16, or part exchange for small lathe about 2½".—C. H. LEGG, 332A, Caerphilly Road, Cardiff.

Corbett (Lathes) Stanton Hill, Mansfield. Telephone 583, Sutton-in-Ashfield. Offer: Motorised Bench Electric Drilling Machines, 0-½, 230/1/50 and 440/3/50. All vee drive, five speeds, price £35 10s.; New Myford ML4 Stands and Treadles, £9 15s. 6d.; Jacob type Drill Chucks, 0-⅜, 24s. 6d.; Crown 4" self-centring, £3 18s. 6d.; Burnerd 4" ditto, £5 17s. 6d.; Brazing Blowlamps, five pint, £4 5s.; Portass Lathes, Excel Precision Lathes, £77; Copper Tubes, ¼" to 7" O.D., Brass; rounds and hex., Silver Solder. All above *in stock*. Carriage extra. S.A.E. for lists. Terms: C.W.O., C.O.D., or hire purchase.

Machine Bargains, must be cleared. Capstans: Warner & Swasey's 1" and 1¼", £20 each; Ward 1", £38; Frost 1", £30; Ward 2", B/G, £42; Atlas motorised 1", £85; Herbert No. 4, A.G.H., £65; Lathes: Seneca Falls, 6" and 7", £50 and £60; also C.V.A. 3½", Atlas 5", American Toolworks 9" gap bed. Many others. List free.—VICTA ENGINEERING COMPANY, Maidenhead. Telephone 50.

Copper Tube for Boilers, ⅜", ½", ¾", 2", 2½", 3", 3½", 4½", and 6", 20-g. to 14-g.; ¼" square copper rod, round copper rod all sizes, steel angles, bright steel, for frames 1/16th, 3/32" and ¼" thick, 2" to 4" in width. Unlimited quantities of the above cut to your length. All supplies for the model engineer.—BROADWAY (BRISTOL) ENGINEERING CO., Wellington Hill West, Bristol 9.

½" High Speed Bench Drill (less chuck), £8; Hand Bench Drill, 55s.; Universal 1/3 h.p. Motor, 230 volt, £5; J.A.P. Stationary Engine, £10. All new condition.—LEFTLEY, Caravan, Humberston, Grimsby.

Buffalo Bench Drilling Machine, new ball races throughout, no motor, £10 or near offer.—MORGAN, 4, Western View, Hayes, Middx.

Lathes Wanted, any type. -80, Ridgeview Road, London, N.20.

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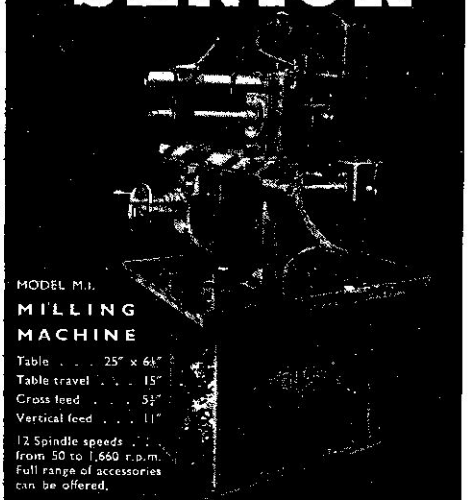

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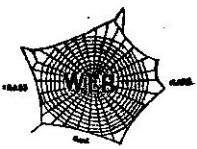

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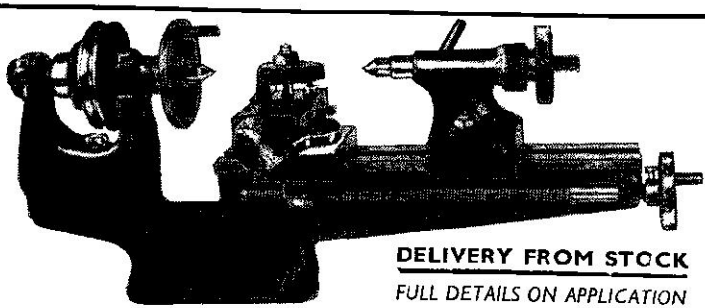

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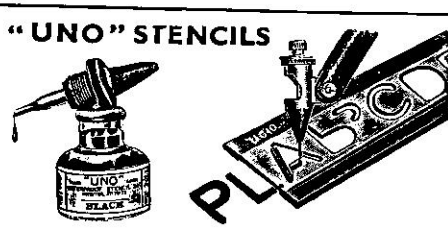

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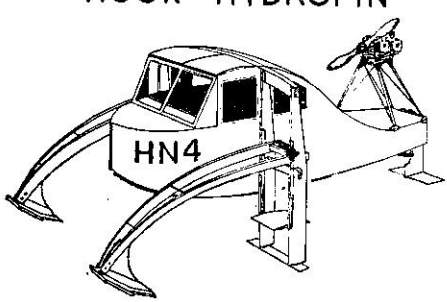

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